

THE INVINCIBLE BOMBER:
PERSPECTIVES ON THE RECOGNITION AND PREVENTION OF
AIRPOWER CRISIS

BY
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APPROVAL

The undersigned certify that this thesis meets masters-level standards of research, argumentation, and expression.

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DISCLAIMER

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the United States Government, Department of Defense, the United States Air Force, or Air University.

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ABSTRACT

This study attempts to enhance understanding of the American strategic bombing crisis that occurred in Europe during 1943. The events leading up to the cessation of unescorted bombing missions into Germany are well known and studied, but analysis generally centers on the explanation that the United States erred by not designing a long-range escort fighter earlier. In contrast, this thesis investigates the development, evolution and execution of Air Corps strategic bombing doctrine over the period from the end of World War I through the fruition of the crisis immediately following the second Schweinfurt bombing mission in October 1943, in an attempt to provide a more nuanced explanation.

Affected by the contextual factors of technological maturity, aircraft production and military financing, pre-World War II air doctrine focused on the potentially decisive effects of strategic bombing. Gradually, this line of thinking came to dominate the Air Corps, manifesting itself in a powerful and resilient idea that the bomber was inevitably invincible. Ultimately, this unofficial doctrine, with its cultural and political baggage, played a major role in shaping the United States' effort in World War II.

The wartime manifestation of this doctrine was the creation of the VIII Bomber Command in England. Through the latter half of 1942, and most of 1943, this command, along with its parent organization, the Eighth Air Force, struggled to implement American strategic bombing theory. That command's failure to successfully adapt in the face of stiffening Luftwaffe resistance, and increasing losses precipitated a crisis, providing valuable historical lessons for air strategists. Understanding the causes of this failure, complete with their relationship to doctrine, could prevent analogous situations in the future.

To facilitate such a comprehensive appreciation, this thesis uses an analytical framework developed by Allison and Zelikow in their book *Essence of Decision: Explaining the Cuban Missile Crisis*. In this work, the authors describe three different paradigms designed to account for a variety of influences common in governmental decision making. On the premise that examination from these perspectives can improve the depth and breadth of situational understanding, and thus provide an improved basis for future air strategies, this thesis seeks to revamp the common interpretation of the United States' unescorted bombing crisis of World War II.

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Introduction

All battles are, in some degree... disasters.

- John Keegan

Throughout history, military crisis is very common. Once committed to violent means, disadvantaged combatants rarely terminate hostilities before their situation has deteriorated significantly. In fact, it is usually the objective of enemy forces to induce just such a predicament. Consequently, military units guard against these efforts, hoping to prevent major operational meltdowns. A valuable tool for avoiding these pitfalls is a comprehensive understanding of the causes and origins of past debacles. With this in mind, it is incumbent upon air strategists to study the most important failures of the airpower era, attempting to benefit from their lessons. The United States' strategic bombing crisis of 1943, where heavy losses to unescorted bombers temporarily derailed the air campaign against Germany, presents a particularly powerful example, with potential applicability to current and future air operations.

Unfortunately, even though many have written about this debacle, study of its causes remains less than comprehensive. Much of the analysis on this subject follows the early judgment of United States Air Force historians. When compiling their voluminous official history of the United States Army Air Forces (USAAF) in World War II, Wesley Frank Craven and James Lea Cate surmised that the failure to develop a long-range escort fighter was "the most serious flaw" in American preparations for the European strategic bombing campaign.¹ Reinforced by the eventual defeat of the Luftwaffe, credited to the P-51 in the long-range escort role, their critique seems to suggest that the USAAF missed a straightforward, available solution. Bernard L. Boylan's Air Force Historical Study, written in 1955, reinforces this conclusion. In this study, titled *The Development of the Long-range Escort Fighter*, Boylan goes to great lengths to illustrate the obstacles and missed opportunities that delayed the development of this aircraft type before World War II. Serving to reaffirm the traditional line of thought on this subject, this impressive work tacitly attributes the American strategic bombing crisis to an inexplicable delay in developing a long-range escort. Unfortunately, this interpretation also masks the complex military decision making processes that focused the Air Corps on unescorted bombing. Therefore, to improve future air strategy, there is a vital question that requires

¹ Wesley Frank Craven and James Lea Cate, *The Army Air Forces in World War II*. Vol. 1, *Plans and Early Operations, January 1939 to August 1942* (Chicago: The University of Chicago Press, 1948), 604.

investigation: How did the USAAF become wedded to the idea of unescorted bombing, and why was it unable to terminate that relationship before a crisis erupted?

In the interest of providing a more comprehensive and nuanced explanation, this monograph analyzes the origins, evolution and execution of American unescorted bombing over Germany during World War II from three separate perspectives. These paradigms, known as the Rational Actor, Organizational Behavior, and Governmental Politics models are derived from the concepts of Graham Allison and Phillip Zelikow, as presented in their seminal work, *Essence of Decision: Explaining the Cuban Missile Crisis*.² In this book, the authors develop a conceptual framework for analysis of complex governmental decisions and use it to deftly explain that historical event. In a similar way, this thesis uses these perspectives; applying them to the origin, planning, and execution of the American strategic bombing effort against Germany, in an effort to better explain how and why that crisis developed. However, even with such formidable tools, it is necessary to refine the focus of this analysis.

Research aimed at uncovering the roots of this aerial crisis quickly reveals a central theme. More than just a question of whether and when long-range escorts were needed, this crisis reflects the struggle to decide how America should employ airpower. During the inter-war years, Air Corps doctrine was heavily influenced by the possibility of independently decisive airpower, and a related desire for service autonomy. The *Invincible Bomber* doctrine, an outgrowth of these ideas, demonstrated tremendous influence throughout this period, and provides a touchstone for this analysis. Hence, the development, evolution and execution of American strategic bombing doctrine provide an appropriate chronological backbone for this investigation, but this study also requires the appropriate context.

The decision, by VIII Bomber Command, to halt unescorted strategic bombing missions over Germany in the fall of 1943, came about because contextual factors that varied over time gradually eroded the propriety of unescorted bombing doctrine, and the Air Corps was unwilling or unable to change. Among the myriad of influential factors, a few stand out. The technological maturity of aircraft design generally improves with time, but its rate of change varies by invention, innovation and wartime necessity. Also, the development of aviation technology constrains the rate of aircraft production, which is driven by the availability of funding. Taking these factors into account, the austere economic conditions of the Great

² Graham Allison and Phillip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, Second Edition (New York: Longman, 1999), 2-11.

Depression followed by a significant military expansion in advance of World War II, clearly influenced Air Corps capabilities and doctrine.

In fact, technological maturity plays a key role in the traditional explanation for the lack of a long-range escort fighter until 1944. Before that time, reasonable men, in many different countries, concluded that producing such an aircraft was beyond their capabilities. Gen Ira C. Eaker, the original commander of the VIII Bomber Command and the leader of the Eighth Air Force during the unescorted bombing crisis, admitted that “he perceived no existing solution” to the escort problem.³ Yet there is significant evidence of missed American opportunities, and technology certainly improved over the course of the war. As a result, even though the United States failed to consistently seek long-range escort aircraft, it gradually became more feasible. However, this improvement did not demonstrate a linear progression.

Industrial production rates for aircraft varied dramatically during the inter-war period. The austere budgets of the early 1930s forced consolidation of aircraft programs, cut production to a bare minimum, and hindered test and development. Forced to focus on the most promising technologies, Air Corps acquisition and doctrine shifted toward bombers. Then, when the United States prepared to sharply increase aircraft production prior to World War II, firmly entrenched supporters of strategic bombing doctrine ensured a bomber centric build up plan, dependent on aircraft defending themselves. Thus, although the ultimate outcome of the air battle depended on timing and the actions of the enemy, the foundations of the American strategic bombing crisis stemmed from earlier decisions.

With this contextual background, the study of these issues can benefit from the use of alternative perspectives. Any analysis requires simplification, but the models developed by Allison and Zelikow provide guidelines to highlight the insights and biases of particular viewpoints. They assert that historians typically simplify their subject matter by treating the behavior of a government as “centrally coordinated, purposeful individuals.”⁴ However, “this simplification – like all simplifications – obscures as well as reveals.”⁵ According to Allison and Zelikow, the traditional historical perspective attempts to explain decisions in terms of rational self-interest. They term this the Rational Actor Model, but see it as inadequate without two other frames of reference.

³ James Parton, “*Air Force Spoken Here*”: General Ira Eaker and the Command of the Air (Bethesda, MD: Alder & Alder, Publishers, Inc., 1986), 123.

⁴ Allison and Zelikow, *Essence of Decision*, 3.

⁵ Allison and Zelikow, *Essence of Decision*, 3.

These alternative perspectives are based on organizational theory, and the political interactions of individuals. The Organizational Behavior Model emphasizes the “distinctive logic, capacities, culture, and procedures” of a large cohesive group.⁶ Consequently, it views output as the result of “regular patterns of behavior.”⁷ The second alternative perspective is the Governmental Politics Model. The political skills of individuals prove key in this paradigm, where decisions result from “bargaining games among players.”⁸ What is more, after introducing these perspectives, Allison highlights that these analytical tools “can be applied broadly in arenas beyond foreign affairs.”⁹ This suggestion invites the application of Allison’s and Zelikow’s prototypical models to each of the military decisions that eventually resulted in the United States strategic bombing crisis of 1943.

In particular, the clear, life or death consequences of some military decisions seem to support the use of the Rational Actor Model. During wartime, the strategic decisions of leaders have the overarching purpose of achieving victory, and can affect large numbers of subordinates. This unity of purpose, coupled with the common circumstance of combatants in a desperate struggle, is reminiscent of a single unitary actor, trying to make decisions that will achieve the group’s objective. And in many cases, this explanatory model seems to work quite well. Yet, there are times when decisions viewed from this perspective seem quite puzzling.

Often times, when decisions diverge from those predicted by a particular explanatory model, a change in perspective can clarify. In analyzing this case, the Organizational Behavior Model seems to be very apropos. The United States Army Air Corps, and its various constituent parts, clearly demonstrate characteristic patterns of behavior shaped by the function and nature of those organizations. In many ways, the overwhelming bureaucratic inertia of certain dominant ideas limited the doctrinal agility of the Air Corps prior to, and during, World War II. Melded with the first model, this paradigm explains many of the apparent discontinuities surrounding this crisis, but a third paradigm can help smooth these rough edges.

Anyone familiar with military hierarchies will easily see the applicability of a model that values the political competition between individual leaders. Throughout history, but especially during this period, these interpersonal relationships had a significant influence over military

⁶ Allison and Zelikow, *Essence of Decision*, 5.

⁷ Allison and Zelikow, *Essence of Decision*, 5.

⁸ Allison and Zelikow, *Essence of Decision*, 6.

⁹ Allison and Zelikow, *Essence of Decision*, 7.

decisions. The Government Politics Model seeks to account for this phenomenon, and adds a convincing sense of authenticity to the analysis, thereby complementing the first two models.

Therefore, in an attempt to better explain how and why the Air Corps failed to recognize and avoid the airpower crisis over Germany in 1943, this thesis is divided into three parallel sections. Each examines the origin and development of strategic bombing doctrine within the Air Corps, its evolution, and its eventual real world application in World War II, from one of the three perspectives described by Allison and Zelikow. In general, the chapters are chronologically oriented, starting with the end of World War I and following the development of air doctrine from the 1920s to the mid 1930s. Each perspective then deals with the watershed events leading up to World War II, and culminates with an appropriately tailored view of how the United States implemented air strategy in the European theater.

CHAPTER 1

The Rational Actor Perspective

The Rational Actor (RA) paradigm often serves as a basis for historical analysis. Its fundamental organizing concept holds that one can simplify a complex historical event, controlled by a large bureaucracy, by viewing the result as a product of sequential, value maximizing, decisions. To facilitate the generalization, this model treats individual decision makers within the bureaucracy as a single unified actor making rational choices between alternatives based on accomplishing goals. Accordingly, perceived costs and benefits guide decision makers: the greater the sacrifice, the less likely the action. Therefore, this paradigm assumes that decisions attempt to optimize utility. In short, the RA model presupposes that decisions, made as rational choices, intend to further a group's common objectives.

A thoughtful examination of the theory of the invincible bomber, from the RA perspective, first requires the examination of context. The backdrop for this analysis starts in post-World War I America, when the theory emerged. It then permeated American air doctrine and ultimately framed the strategic air campaign against Germany in the Second World War. The VIII Bomber Command, established in early 1942, was designed specifically to execute the bomber doctrine of the time and became the test bed for this concept until its failure and subsequent rejection in 1943. While many individuals influenced this course of events, the United States Army Air Forces (USAAF) fit the role of unified actor. The overarching objective was always the defense of the United States, but the implications of that goal changed over time. The USAAF objective shifted from pursuit of the most cost effective doctrine to finding and executing a strategy to defeat Germany. According to the RA paradigm, the leaders of the USAAF weighed their alternatives, making choices that eventually led them to develop a doctrine incorporating invincible bomber theory, and the attempt to execute it. Ultimately, the recognition of doctrinal failure hinged on a simple decision that, until an alternative solution could be found, the benefits of continued bombing did not outweigh the cost of unsustainable attrition.

The Evolution of the Invincible Bomber Doctrine

World War I had a tremendous impact on public perceptions of military aircraft. Battlefield innovation and operational necessity spurred rapid changes in aircraft design. By the

end of the war, the Allies had established air superiority, as well as a clear delineation between aerial missions and airframe types.¹⁰ The limits of design gave rise to the idea that pursuit aircraft for counter-air missions needed to be small and light to compensate for underpowered engines, thereby maximizing speed and maneuverability. Meanwhile aircraft tasked with observation or bombing were generally larger, and often used multiple engines, so that they could carry more fuel and passengers for greater distances and longer missions aloft.¹¹ The price was maneuverability. As a result, by 1918, American airmen generally recognized the inadequacy of bomber self-defense, and the resulting vulnerability to fighter attacks.¹² Leaders of the fledgling air service made a rational judgment that “bombers could not defend themselves satisfactorily in the face of hostile pursuit plane attacks without the aid of escort.”¹³

After the war, the Air Service internalized these conclusions. As the Air Service Tactical School became the center for air doctrine development in the 1920s, it recognized escort as a valid mission for pursuit aircraft, and influential theorists, such as William C. Sherman, wrote doctrine codifying the bomber’s need for escort. In, *Air Warfare*, Sherman emphasized that “no mistake could be more destructive in its consequence than to underrate the value of pursuit aviation to air operations as a whole,” and that it is “highly important to have bombardment operations supported, as a rule, by friendly pursuit aviation.”¹⁴ At the same time, the determined efforts of Gen William “Billy” Mitchell, and his supporters, greatly increased the expectation that air power could provide a decisive, war winning capability through strategic attack. By the end of the 1920s, his writing took on a confident air, brazenly stating that the other military branches “will take a position second to that of air power,” and claiming that “in future wars, aircraft will project the spear point of the nation’s offensive and defensive power against the vital centers of the opposing country.”¹⁵

To facilitate this vision, the United States Army Air Corps sponsored the development of innovative new technologies. Starting in 1929, the Air Corps spurred manufacturers to develop a series of heavy aircraft that formed the nucleus of a viable strategic attack capability. With each successive generation of bombers, from the B-10 to the B-17, designers leveraged technological

¹⁰ Bernard L. Boylan, *The Development of the Long-range Escort Fighter* (Ph.D. diss., University of Missouri, 1955), 5. (Also known as USAF Historical Research Study No. 136)

¹¹ Army War College, *The Signal Corps and Air Service* (Washington D.C.: Government Printing Office, 1922), 76.

¹² William C. Sherman, *Air Warfare* (New York: The Ronald Press Co., 1926), 206.

¹³ Boylan, AFHS 136, 7.

¹⁴ Sherman, *Air Warfare*, 119, 206.

¹⁵ William Mitchell, *Skyways: A Book on Modern Aeronautics* (Philadelphia: J. B. Lippincott, 1930), 256, 269-270.

advances to significantly improve range, speed, and payload capacity.¹⁶ In turn, these innovations influenced Air Corps doctrinal development because they changed the rational equation. In World War I, bombers had no choice but to attack from low altitude, due to bombing accuracy. Any error was magnified by altitude, resulting in a dramatic reduction in effectiveness.¹⁷ At the same time, attacking aircraft had to deal with both enemy fighters and ground fire. So, when improved technology presented a viable way to minimize much of that threat by flying above it, there was ample incentive for the Air Corps to adopt high altitude bombing, contingent on achieving the necessary accuracy.

Fortunately, the development of mechanical bombsights promised the required precision. By 1931, after years of bombsight development under the auspices of the Army Air Corps Materiel Division, “the radial errors of bombs dropped from 15,000 feet (the altitude anticipated in combat) were generally a respectable 200 to 300 feet.”¹⁸ Continued improvements included gyroscopic stabilization and autopilot systems that culminated in 1935 with the marriage of the Norden XV bombsight and the B-17.¹⁹ According to the official history of the Army Air Forces in World War II, this combination provided “the material prerequisites for precision bombardment: a long-range plane of unusual stamina capable of flying above the effective range of flak, and bombsights of unrivaled accuracy.”²⁰

Hence, this parallel improvement in airframe performance and bombing accuracy enabled the iterative revision of Air Corps doctrine to accommodate strategic bombing. Over a period of several years in the early 1930s, the apparent dominance of bomber capability pushed Air Corps doctrine toward the theoretical method of high altitude, precision, daylight bombing (HAPDB) against critical industrial targets. Seeking to avoid the bloody trench warfare of the Great War, and calling on the ideas of Giulio Douhet and Billy Mitchell, Air Corps theorists reasoned that an enemy could be subdued through strategic air attack of key targets, at a comparatively lower cost

¹⁶ Boylan, *AFHS 136*, 12.

¹⁷ Timothy Moy, *War Machines: Transforming Technologies in the U.S. Military, 1920-1940* (College Station, TX: Texas A&M University Press, 2001), 81.

¹⁸ Moy, *War Machines*, 83.

¹⁹ Ironically, the Norden bombsight was a Navy sponsored innovation. The United States Army Air Corps originally backed the Sperry bombsight but switched when the Norden proved more accurate. Nevertheless, both were used extensively. For more information on bombsights from this era see Stephen L. McFarland, *America's Pursuit of Precision Bombing: 1910-1945* (Washington D.C.: Smithsonian Institution Press, 1995).

²⁰ Wesley Frank Craven and James Lea Cate, *The Army Air Forces in World War II*. Vol. 1, *Plans and Early Operations, January 1939 to August 1942* (Chicago: The University of Chicago Press, 1948), 599; For more information on this subject read, Stephen L. McFarland, *America's Pursuit of Precision Bombing*, 68-88.

than land battle.²¹ HAPDB doctrine was the Air Corps' chosen means, but once again, technological limitations shaped the debate.

For several years, in the late 1920s and early 1930s, the developing capabilities of the American bomber rapidly outstripped American fighter designs. Underpowered engines resulted in relatively small fighters with limited fuel capacity and short range. Meanwhile, multi-engine bombers became considerably larger, carrying more fuel for increased range, even while they improved their speed by taking advantage of the aerodynamic efficiencies produced by their large smooth surfaces.²² By 1934, the successive generations of vastly improved bombers tended to overshadow the products of lackluster fighter development.

As the performance gap narrowed to the point where fighters had a minimal speed advantage over bombers, it appeared as though the lessons of World War I no longer applied.²³ Since fighters had no efficient way of locating bombers, and little speed advantage with which to affect an intercept, the prevailing sentiment predicted greatly reduced bomber attrition due to fighters. According to the future chief of the Army Air Forces, Gen Henry "Hap" Arnold, commenting after an exercise in 1934, "Pursuit or fighter airplanes operating from front line airdromes will rarely intercept modern bombers except accidentally."²⁴ As a result, bomber advocates saw little need for escort aircraft.

Indeed, in the mid-1930s the risks associated with potentially decisive bomber operations appeared to be shrinking, and bomber capability continued to improve. American bomber designs were increasingly capable of delivering large payloads with the precision required to execute the HAPDB doctrine. At the same time, high altitude capability, a seemingly low probability of intercept, and formidable defensive armament, promised to limit attrition. Hence the costs associated with bomber operations appeared to be minimal and shrinking, greatly enhancing the appeal of the strategic attack concept. A famous passage from a popular book co-authored by then Brig Gen Arnold and Maj Ira C. Eaker in 1935, illustrates the optimism that many future Air Corps leaders felt:

The formations will continue persistently onward as persistent as the waves of the sea. The fighting and pursuit planes will soon exhaust their fuel supply, cease their attacks, and land for servicing, but the bombers will complete their missions

²¹ Martha Byrd, *Kenneth N. Walker: Airpower's Untempered Crusader* (Maxwell AFB, AL: Air University Press, 1997), 28.

²² David E. Johnson, *Fast Tanks and Heavy Bombers: Innovations in the U.S. Army, 1917-1945* (Ithaca, NY: Cornell University Press, 1998), 154.

²³ The P-26 had a 50 knot speed advantage over the B-12 in 1934; Boylan, AFHS 136, 13.

²⁴ Boylan, AFHS 136, 13.

and return to their bases to take on more bombs for other operations. Once more the pursuit planes will rise to the attack and endeavor to halt the seemingly endless stream of hostile bombers until the defending airmen are exhausted and the losses of planes becomes so great that the few remaining effectives can be brushed aside with little or no effort. The bombers keep coming.²⁵

However, before embracing such a doctrine, the Air Corps needed to re-examine the relationship between its two primary aircraft types. Throughout the 1930s, Army Air Corps aviators were divided between those with allegiance to fighters and those who supported bombers. Even though the two different aircraft types traditionally operated in a complementary role, an era of tight budgets resulted in competition for funding.²⁶ As the Air Corps moved toward strategic bombing, fighter development inevitably suffered as the service placed its money on the bomber. Understandably, leaders and lawmakers chose to pursue the most attractive concept. As bomber development outpaced that of fighters, it appeared that fighters were a luxury, not a requirement.²⁷ Moreover, theorists had difficulty debunking this assertion because they believed there had been no “real tests of modern airpower.”²⁸ Even in the multiple aerial conflicts between the years 1935 to 1939, “American theorists saw little in the overseas wars to modify their conceptions and a good deal which appeared to confirm them.”²⁹ Absent empirical evidence, escort advocates found themselves at a disadvantage. The 1935 edition of the Air Corps Tactical School *Bombardment* text stated, “Escorts would neither be provided nor requested unless experience showed that bombardment could not penetrate enemy resistance.”³⁰ Consequently, a reasonable decision based on the information available at the time, resulted in the prioritization of bombers over fighters. While, in retrospect, this emphasis seems to have hampered American efforts to develop a long-range escort fighter, no other countries developed such aircraft either, suggesting that, prior to World War II, long range escort was technically infeasible, at least until technological development surged as a result of the World War II production boom.

For many of the instructors and doctrine writers at ACTS, strategic bombing offered the best return on the country’s investment. Airmen such as Kenneth N. Walker, Haywood S.

²⁵ Henry H. Arnold and Ira C. Eaker, *This Flying Game* (New York: Funk & Wagnalls, 1936), 136-137.

²⁶ Johnson, *Fast Tanks*, 157.

²⁷ Johnson, *Fast Tanks*, 166.

²⁸ Thomas H. Greer, *The Development of Air Doctrine in the Army Air Arm: 1917-1941*, (Maxwell AFB, AL: Air University, 1953), 101. (Also known as *USAF Historical Research Study No. 89*)

²⁹ Greer, *AFHS 89*, 101.

³⁰ When the Air Service Tactical School moved to Maxwell Field in 1931, its name was changed to the Air Corps Tactical School; *Bombardment*, ACTS text, November 1935, 140, AFHRA 248.101-9.

Hansell and Laurence S. Kuter worked diligently to develop an air doctrine for winning wars with minimal loss of life and treasure. They firmly believed that HAPDB of the enemy industrial web was the best way to do that, and by 1932 they codified these ideas as Air Corps doctrine.³¹ The acceptance of this doctrine represented the first major decision in a series of choices that shaped the way the USAAF fought in World War II.

The Air Corps' focus on strategic bombing led directly to the ascendance of the idea that bombers, properly employed, were unstoppable. From this starting point, the myth of bomber invincibility grew, eventually spawning the strategic bombing crisis of 1943. A 1934 statement by the assistant chief of the Air Corps reflected this belief. Brig Gen Oscar Westover bluntly declared that nothing could frustrate the accomplishment of a bombardment mission.³² In the United States, during the mid-1930s, a combination of new technology and the allure of a potentially decisive doctrine contributed to the ascendance of the strategic bomber. Improvements in service ceiling and top speed allowed bombers to over-fly ground defenses and evade interceptors, making them less vulnerable. At the same time, heavier defensive armor, and a larger array of defensive armament, increased their survivability.³³ On this basis, influential bomber advocates such as Arnold and Eaker asserted that fighters could not prevent bombers from reaching their targets. In their 1936 book, *This Flying Game*, they opined, "When missions are considered to be of sufficient importance, planes will always break through any patrol system."³⁴ These new strengths helped foster optimism that HAPDB, against the industrial web of an adversary, could subdue an enemy independent of ground forces.

In turn, this theory served to focus the Air Corps almost exclusively on bombing, generating hope of a quick victory. These high expectations increased with the emergence of the highly capable B-17 in 1935, while American fighter design continued to lag technologically. Even so, the Air Corps leadership never expected true bomber invincibility, estimating modest attrition. Still, there was some logic to the idea that continually increasing bomber performance and capability would outstrip defensive developments, and for a few years during the mid-1930s, the bomber appeared truly invincible.³⁵

³¹ Johnson, *Fast Tanks*, 156.

³² Boylan, *AFHS 136*, 13.

³³ Johnson, *Fast Tanks*, 165.

³⁴ Arnold and Eaker, *This Flying Game*, 134-135.

³⁵ Bomber advocates expected that "daylight raids would be opposed by anti-aircraft and hostile pursuit," (Byrd, *Walker*, 33.) implying that they expected attrition. Later, in October of 1942, in a letter to Arnold, Eaker estimated that unescorted attacks into Germany could be accomplished with an attrition rate of 4%. That turned out to be a gross underestimate. (Boylan, *AFHS 136*, 68.)

However, later in the decade, bomber advocates tended to soften their views. According to Bernard L. Boylan, “The experience of the Spanish Civil War (1936-1939), demonstrated to some observers the vulnerability of the bomber, though the majority of American airmen still regarded it as invincible against pursuit attack.”³⁶ In particular, Arnold eventually revealed his doubts about the adequacy of bomber self-protection capability and convened a board to investigate the subject in December of 1939.³⁷ However, the board’s findings straddled the issue by concluding that “Pursuit or fighter escorts may become necessary for the protection of older models of bombers in order to obviate excessive losses;” although they said that “its absence would not justify abandoning important missions.”³⁸ The perception that advanced bombers could still successfully go it alone, if necessary, meant that escort was merely beneficial, rather than essential. Furthermore, if escort was only required for older, more vulnerable bombers, then upgrading the bomber force produced the same benefit as developing a new escort fighter. Thus, while the United States rapidly accelerated aircraft production in advance of World War II, the development of long-range fighter escort received little priority. In fact, even when President Roosevelt ordered a review of “the over-all production requirements required to defeat our potential enemies,” in the summer of 1941, the development of an aircraft suitable to defend long range bombers was given the lowest priority for future pursuit development.³⁹

Nevertheless, the outbreak of war in Europe produced evidence that challenged the popular American assumption of bomber invincibility. Air theorists at ACTS were aware that German and Russian lessons from the Spanish Civil War highlighted the need for escort, but they saw the marginal capabilities of German and Russian bombers as a significant mitigating factor.⁴⁰ According to Harrison G. Crocker, the ACTS instructor on *The Use of Aviation in the Spanish Civil War*, “Most of the aircraft employed was [sic] obsolete; the tactics ill-defined.”⁴¹ Consequently, American bomber advocates viewed the Spanish Civil War as justification for American development of a modern heavy bomber designed to leverage specialized doctrine. Crocker went on to point out that “from all reports, the flight of bombers with defensive

³⁶ Boylan, AFHS 136, 21.

³⁷ Conference for Study on Improvement in Armament and Defensive Firepower of Bombardment Aircraft, 20 Dec 1939, AFHRA 167.5-53.

³⁸ *Firepower of Bombardment Formations*, Report of the Air Corps Board, Study #53, 3 Jan 1940, 5, AFHRA 167.5-53.

³⁹ Craven and Cate, *AAF in WWII*, Vol. 2, 131; Pursuit Board Report, Section X, 31 October 1941, 5, AFHRA 168.12-9.

⁴⁰ Harrison G. Crocker, *The Use of Aviation in the Spanish Civil War*, ACTS text, 1937-1938, AFHRA 248.501-79B, p19.

⁴¹ Boylan, AFHS 136, 21.

armament covering the full sphere of action and flying in a tight formation with pursuit protection creates an attack problem which has not been satisfactorily solved.”⁴² Except for its mention of escort, this statement would seem to validate the American belief that well flown bomber formations were invincible. Yet, the rapid escalation of the air war over Europe soon provided additional insight.

After the September 1939 invasion of Poland, the extensive use of Axis airpower provided several important examples of unescorted bomber vulnerability. Most notable and applicable was the air battle that developed between Great Britain and Germany in 1940. While Americans observed, German bombers were efficiently located and intercepted using Britain’s new radar technology.⁴³ These early warning networks vectored fighter aircraft directly toward enemy bombers, obviating the USAAC argument that attackers would be difficult to intercept.⁴⁴ The results of this combat action in Europe involved heavy losses on both sides. Germany eventually relented from most of their air attacks due to the stiff British defense, and Britain quickly abandoned unescorted daylight strategic bombing against the European continent in the face of high bomber attrition.

As many in the American military came to grips with the likelihood that the United States would eventually become involved in the war, the USAAC scrutinized its doctrine, and the question of bomber vulnerability resurfaced. In late 1939, Gen Henry “Hap” Arnold, chief of staff of the Air Corps, and a strong supporter of the bomber, expressed his doubts in a letter to the commanding general of the General Headquarters Air Force, stating that “A doctrine which has been widely propounded in certain Air Corps circles for many years to the effect that fighter craft cannot shoot down large bombardment planes in formations, has now been proven wholly untenable.”⁴⁵

Nevertheless, during the late 1930s and early 1940s, many American airmen grudgingly accepted an increased assessment of bomber vulnerability. They felt there was no viable alternative to strategic bombing as a way to reach deep into enemy territory and strike decisively. In the tense atmosphere of the build up to American involvement in World War II, the Air Corps faced the question of how to adjust its doctrine. Any drastic change would further delay preparations for war. The United States imperative to prepare to fight quickly, limited choices.

⁴² Boylan, *AFHS* 136, 21.

⁴³ Paul Jacobs and Robert Lightsey, *Battle of Britain Illustrated* (New York: McGraw-Hill, 2003), 14.

⁴⁴ Byrd, *Walker*, 26.

⁴⁵ Henry H. Arnold, Letter to Commanding General GHQ Air Force, 14 Nov 39, AFHRA 167.5-54 (dated 27 Aug 1940).

The Air Corps needed a way to limit bomber attrition inflicted by fighter defenses. Escort aircraft provided the traditional answer to this problem, but not the only solution.

The Air Corps considered several alternatives, but each had drawbacks. Night bombing, which had been adopted by the British, made precision bombing impossible, invalidating the basic premise of American doctrine. Also, defensive armament could be increased, but the newest American bombers were already heavily armed and every pound of weaponry and added ammunition detracted from bomb payload, decreasing both speed and range. The problem of developing an effective long-range escort fighter involved endurance, speed, and maneuverability tradeoffs, which most engineers had long since concluded would “result in extremely unsatisfactory performance.”⁴⁶ Yet, according to Eaker, during his assignment as an observer in Britain, “the English, almost to a man, keenly desired such a plane, but doubted if one could be built satisfactorily.”⁴⁷ It was thought that the size required for adequate fuel capacity would adversely impact speed and agility.⁴⁸ The result was that when the United States began gearing up to support its European allies and contemplated its own plans, there was a lingering question regarding bomber survivability.

In the late summer of 1941, President Roosevelt requested an estimate of the production requirements for defeating potential enemies. The resulting document known as AWPD/1 established a plan for the rapid expansion of the USAAF, initially based on aircraft models currently in production or in advanced stages of development. The plan generally reflected current doctrine, calling for large numbers of bombers designed to defeat Germany through strategic attack. Although the chief of the Air War Plans Division, Harold George, told Arnold that “it looked to him as though the bombers were going to need fighter protection,” AWPD/1 relied on the assumption that the bombers would get through. Because planners believed that “American bombers were better armed,” and their formations were tighter, “it was still possible to believe that bombers would get through.”⁴⁹ Little did these planners realize that in less than six weeks the United States would be at war, and implementing this plan with minimal revision.

Doctrinal Execution

⁴⁶ *Multi-Engine Fighter Aircraft*, Report of the Air Corps Board, Study #2, 15 July 1935, AFHRA 167.5-2.

⁴⁷ Ira C. Eaker, Report on Trip to England, Section III, 23, AFHRA 168.1-13A.

⁴⁸ Ira C. Eaker, Report on Trip to England, Section III, 23, AFHRA 168.1-13A.

⁴⁹ Byrd, *Walker*, 73.

In the lull following Pearl Harbor, American airmen set up the organizations that would carry out their war plan. In light of the slow build up of ground forces, an American strategic bombing campaign was seen as one of the earliest ways that the United States could carry the fight to the enemy. As an observer in Britain prior to overt American involvement in the war, Ira Eaker was intimately familiar with the British air effort and became the leader of the fledgling VIII Bomber Command, charged with executing the strategic bombing campaign. As such, he became the most influential USAAF leader with respect to the use of strategic bombers in an unescorted role.

Even after the failed British employment of the B-17 in the spring of 1941, many on the American Air Staff still refused to believe “that the plane was incapable of unescorted missions against hostile fighters.”⁵⁰ However, Eaker was keenly cognizant that “the purpose of the Bomber Command, United States Army Forces, British Isles, was the destruction of vital enemy targets,” and that depended on a variety of variables including “the effect of enemy opposition and American wastage rates.”⁵¹ Both Eaker and his superior, Gen Carl “Tooey” Spaatz, recognized that bomber attrition greater than five percent per mission was not sustainable, even in the short term.⁵² Consequently, the USAAF struggled throughout 1942 to ferry enough aircraft and crews across the Atlantic to form a credible offensive force. Once they had enough striking power, they planned to strike deep into Germany. However, without significant improvements in escort range, Eaker’s bombers would be forced to rely primarily on self defense.

From this point on, the decisions relating to the prosecution of the strategic air campaign against Germany devolved into a series of rational calculations, aimed at solving near term problems. Eaker, in combination with Spaatz at Eighth Air Force and Arnold in Washington, monitored the build up of American Air Forces in Europe while continually reacting to crises. Although he never abandoned the goal of defeating Germany through strategic attack, the competing priorities of the President, national allies, and the Army, had an impact on Eaker’s application and adaptation of doctrine. In many cases, VIII Bomber Command had to make the best of the poor alternatives available; because it was impossible to implement doctrine as originally conceived. Not surprisingly, the theoretical doctrine from before the war required

⁵⁰ Boylan, *AFHS 136*, 38-39.

⁵¹ *Tactical Doctrine in Employment of Bombardment Aviation*, Plan for Bomber Command and Constituent Units to Arrive in U.K. in 1942, Annex, Part V, 1942, 2-3, AFHRA 142.044E.

⁵² Parton, “*Air Force Spoken Here*”, 172.

adjustment when exposed to war's reality. After the initial attempted application of doctrine, the Germans reacted to American tactics, spurring a retaliatory cycle of counter moves that changed many fundamental assumptions. From the RA perspective, the story of the American strategic bombing campaign in Europe reflects how well Eaker and his superiors used and adjusted this doctrine to accomplish the overall objective of defeating Germany.

In the spring of 1942, Eaker stood up VIII Bomber Command in England with the mission of strategic bomber attack against Germany. To physically outfit the command, the Eighth Air Force expected a steady influx of B-17s, accompanied by P-38s. As for operational philosophy, Arnold insisted that, "not English but only American doctrines and principles must guide us."⁵³ However, even within Eaker's chain of command, there was serious doubt that the B-17 was capable of executing the HAPDB doctrine without additional protection against German fighters. Before the VIII Bomber Command's first mission, Spaatz considered abandoning HAPDB in favor of the British method of night area attacks.⁵⁴ Despite these concerns, Eaker set out to follow existing doctrine with an eye toward minor modifications that would limit attrition. As the first B-17s met the German defenses in France and the Low Countries, British Spitfires shielded them.⁵⁵ Eighth Air Force fighters eventually supplemented this coverage, but they also lacked the range necessary for deep escort.

Although their utility was questioned, American engineers had, by this time, demonstrated the technical feasibility of range extension tanks. Tested in America during the inter-war years, and quickly adapted once hostilities commenced, P-38s were ferried across the Atlantic using specially designed tanks in the summer of 1942.⁵⁶ However, there was no existing doctrine for their use in combat, and pre-war experience associated drop tank use with the risk of fire.⁵⁷ Until it was shown that unescorted bombers were vulnerable, it was difficult to justify the considerable design effort to create a bulletproof, pressurized, aerodynamic, and disposable fuel tank.⁵⁸ Furthermore, the scarcity of valuable manufacturing resources forced the USAAF to choose between tank construction and other critical war needs.⁵⁹ Without a valid concept of

⁵³ Eighth Air Force Policy File, 21 Feb 42, Vol. II, 39, AFHRA 520.154.

⁵⁴ Carl A. Spaatz, *Selection of Targets for Operations Against Germany*, Letter to Eighth Air Force G2, 5 May 1942, AFHRA 520.186.

⁵⁵ Boylan, *AFHS 136*, 62.

⁵⁶ Boylan, *AFHS 136*, 52, 118.

⁵⁷ Boylan, *AFHS 136*, 46.

⁵⁸ Boylan, *AFHS 136*, 112.

⁵⁹ Boylan, *AFHS 136*, 112.

operations and a demonstrated need, range extension tanks would not receive sufficient priority to spur development and large-scale production.

Early American bombing missions, in August of 1942, did little to clarify the situation. At this time, the VIII Bomber Command could only generate a modest number of bomber sorties for any particular mission, and the P-38s intended as escorts were appropriated for Operation Torch, in North Africa.⁶⁰ However, the results of these few initial missions were seen as encouraging. The evident success of these raids, coupled with the ruggedness of the aircraft and an apparent reluctance on the part of German fighters to tangle with the B-17 formations, led the leaders of the Army Air Forces to conclude that HAPDB was viable, and their concerns over the necessity of escort unfounded.⁶¹ In a letter to Spaatz on 27 August 1942, Eaker expressed that he was “now thoroughly convinced… that in the future successful bomber operations can be conducted beyond the range of fighter protection.”⁶² Extrapolating based on the evidence available; Eaker concluded from these early missions that the B-17 could adequately defend itself.

As the buildup continued, Eaker naturally desired the most advantageous situation with the least threat, but he saw little reason to question doctrine. Additional escort was undoubtedly desirable if not strictly necessary, so when P-38s became available in the fall of 1942, they were put to work protecting the bombers. Near the end of September 1942, they flew their first long-range escort mission.⁶³ According to AWPD/42, a major revision to the American war plan, “The Commanding General of the American Army Air Forces in Great Britain [Spaatz] has expressed the opinion that our current type of bombers can penetrate existing German defenses to the limit of their radius of operation without excessive losses.”⁶⁴ In fact, just weeks earlier, Spaatz promised Arnold that “as soon as sufficient numbers have been built up, our daylight raids will be extended into the Heart of Germany.”⁶⁵ Apparently he felt that the VIII Bomber Command was on track to accomplish its mission even without long-range escort.

Eaker’s plan was to start slowly by executing shallow raids with smaller formations and fighter escort that would gradually be replaced by larger groups, penetrating deeper with partial fighter coverage. Given large enough formations, he believed that eventually his bombers could

⁶⁰ Boylan, *AFHS 136*, 61; Parton, “Air Force Spoken Here,” 194.

⁶¹ Boylan, *AFHS 136*, 62-63.

⁶² Ira C. Eaker, Letter to Spaatz, 27 Aug 42, quoted in Boylan, *AFHS 136*, 64.

⁶³ Boylan, *AFHS 136*, Chap II, Footnote 46.

⁶⁴ *Requirements for Air Ascendancy*, AWPD/42, Tab. D, 9 September 1942, 1-2, AFHRA 145.82-42.

⁶⁵ Carl A. Spaatz, Letter to Arnold, Spaatz Diary Extract, 24 August 1942, quoted in Boylan, *AFHS 136*, 64.

strike deep within Germany without fighter support.⁶⁶ In October of 1942, Eaker was convinced that his command's course of action was "not only practical but economical."⁶⁷ In a letter to Arnold, he asserted "Three hundred heavy bombers can attack any target in Germany by daylight with less than four percent losses."⁶⁸ To all appearances, the strategic bombing campaign was on course to achieve its goals at a very reasonable cost. However, evidence to the contrary surfaced later that year.

In the winter of 1942, the VIII Bomber Command flew a series of raids against submarine pens on the coast of France. During this period, German fighter opposition increased, raising the number of American losses significantly. On three missions, over a two-week period from 20 December 1942 to 3 January 1943, the VIII Bomber Command loss rate jumped to an average of 8.9 percent.⁶⁹ These comparatively high rates of attrition resulted in renewed pressure from the British for the Americans to join them in bombing at night.⁷⁰ As the man most closely connected with the effort, Eaker defended the American doctrine at the Casablanca Conference in January 1943.⁷¹ He believed that these recent troubles were not a fair test of American strategic bombing doctrine. Eaker argued that the size of his force still could not support the large-scale formations necessary to optimize self-defense capability and cautioned that assigning the same targets repeatedly allowed the Germans to prepare their defenses.⁷²

However, Eaker's most persuasive arguments for continued daylight bombing were not contingent on bombing success, but rather on the utility of the continuous strain imposed by a lack of respite for the Germans.⁷³ In a post-conference directive, Eaker's argument was reiterated; "You should take every opportunity to attack Germany by day, to destroy objectives that are unsuitable for night attack, to sustain continuous pressure on German morale, to impose heavy losses on the German fighter day force and to contain German fighter strength away from the Russian and Mediterranean theaters."⁷⁴ Anticipating the importance of air superiority during

⁶⁶ Ira C. Eaker, Plan for Anti-Submarine Bombing in Letter to Spaatz, Spaatz Diary Extract, 14 October 1942, quoted in Boylan, AFHS 136, 67.

⁶⁷ Boylan, AFHS 136, 68.

⁶⁸ Boylan, AFHS 136, 68.

⁶⁹ On 20 December 1942, six bombers out of an attacking force of 72 were lost on a raid against Romilly-sur-Seine. On 30 December 1942, three bombers out of 40, failed to return from a mission against the sub pens at L'Orient. Then, on 3 January 1943, seven of 68 bombers were shot down on another mission against the submarine pens. Boylan, AFHS 136, 80-81.

⁷⁰ Parton, "Air Force Spoken Here", 218.

⁷¹ Parton, "Air Force Spoken Here", 216-221.

⁷² Ira C. Eaker, Letter to Stratemeyer, 2 January 1943, quoted in Boylan, AFHS 136, 80.

⁷³ Parton, "Air Force Spoken Here", 221.

⁷⁴ Parton, "Air Force Spoken Here", 223.

the proposed Allied invasion of Europe, Eaker also stressed that day bombing would “produce the greatest reduction to his [the German] air force.”⁷⁵ In a sharp conversation with Arnold, Eaker noted that changing American tactics to night bombing “is absurd... It will permit the Luftwaffe to escape... The cross-Channel invasion will then fail.”⁷⁶ On many occasions Eaker confidently cited the favorable kill ratios reported by his bomber crews. In spite of growing losses, Eaker declared “We are still able and shall continue to knock down better than six to one enemy fighters for our bomber losses.”⁷⁷ Although inflated, this claim served to mitigate the criticism of American doctrine during early 1943. This argument not only helped to convince the British to relent on night bombing demands, but also continued to discourage the VIII Bomber Command from abandoning the enduring notion that American bombers would ultimately prove invincible.

Nevertheless, Eaker realized that increased losses without commensurate returns would unravel his efforts. In the face of stronger resistance, he sought tactical adjustments and more bombers to decrease losses. Although Eaker had shown limited interest in escort up to this point, he quickly planned for the integration of relatively long-range P-38 escort, only to be frustrated when these aircraft were diverted to North Africa.⁷⁸ Even so, Eaker, who had recently been promoted to Eighth Air Force commander, felt compelled to venture deeper into Germany. He believed “that it was utterly impractical to ‘postpone’ attacks against Germany, for that would lead to further skepticism and disillusion about the validity of the daylight program and could well provoke the British to reclaim all the airports and facilities they had turned over to the Eighth and to force its conversion to night bombing under the RAF [Royal Air Force].”⁷⁹ As a result of these concerns, members of the Air Staff rekindled efforts to develop a suitable escort, considering both the development of a new long-range fighter, as well as destroyer variants of the B-17 and B-24 that traded payload capacity for increased defensive firepower on the theory that they could better protect bomber formations.⁸⁰ However, even as these adjustments were being made, Germany responded with tactical countermeasures.

During 1943, Eaker intended to penetrate deeper into Germany, but innovative improvements in German weaponry trumped the incremental improvements that he hoped would

⁷⁵ *The Case for Day Bombing*, Eaker Papers, Library of Congress, quoted in Parton, “*Air Force Spoken Here*”, 220.

⁷⁶ Parton, “*Air Force Spoken Here*”, 218.

⁷⁷ Ira C. Eaker, Letter to Stratemeyer, 2 January 1943, quoted in Boylan, *AFHS 136*, 80.

⁷⁸ Ira C. Eaker, Letters to Arnold, 11 January 1943 and 29 January 1943, quoted in Boylan, *AFHS 136*, 81.

⁷⁹ Parton, “*Air Force Spoken Here*”, 233.

⁸⁰ Boylan, *AFHS 136*, 136-146.

keep VIII Bomber Command losses low. As VIII Bomber Command entered phase two of its plan to strike deep into the Nazi industrial areas, American bombers started to routinely outdistance their escort. When Arnold, once again, diverted the longer-range P-38s to North Africa, Eaker made the pragmatic decision to accept the P-47 Thunderbolt for escort duty. Nonetheless, he reminded Arnold, “the full tactical use of the plane [the P-47] would depend to a considerable degree on how fast he could be furnished with droppable tanks.”⁸¹ Although the first Thunderbolt arrived in England before the end of 1942, they were not available in quantity until late March 1943, and then without tanks. Although some tanks were available by mid-summer, poor planning and production problems prevented an adequate supply until late in 1943.⁸² This created a situation, starting in the spring of 1943, in which bombers routinely flew well beyond the range of the available escort.⁸³ For Eaker, the decision to pursue these targets involved a trade off between the additional risks associated with unescorted bombers proceeding to their targets, balanced against the painful costs of delaying potentially decisive missions into the heart of Germany. Maintaining his faith that bombers in large, well-flown formations would eventually prevail, Eaker chose to fall back on the outmoded doctrine of the self-defending bomber. Despite the trend of growing losses since December 1942, Eaker expressed his opinion about future operations on 18 March 1943 after a successful raid with only one loss.

There should no longer be the slightest vestige of doubt that our heavy bombers with their trained crews can overcome any enemy opposition and destroy their targets...All of us can now, I feel, look forward confidently to the next chapter in the air war, wherein we shall employ the lessons we have learned in the experiment, in an air offensive with forces of sufficient size.⁸⁴

Unbeknownst to Eaker, the Germans were reinforcing their homeland defense fighter forces by redeploying aircraft from the Eastern Front and modifying many of their FW-190 aircraft with 33 mm cannon capable of outranging the .50 caliber machine guns employed by the bombers.⁸⁵ This combination of German actions, coupled with the realities of longer bomber exposure as the raids penetrated deeper into Germany, had a dramatic effect. During the summer

⁸¹ Boylan, *AFHS 136*, 79.

⁸² Boylan, *AFHS 136*, 120-121, 123, 128.

⁸³ *Tactics and Techniques of Long-Range Fighter Escort*, History of the Eighth Air Force, April 1943 – February 1944, 20, AFHRA 520.549A.

⁸⁴ Ira C. Eaker, *Commendation to VIII Bomber Command After Vegesack Mission*, 24 March 1943, Eaker Papers, Library of Congress, quoted in Parton, “*Air Force Spoken Here*”, 244.

⁸⁵ Parton, “*Air Force Spoken Here*”, 285 (Fighter Redistribution); Boylan, *AFHS 136*, 87 (33mm in FW-190).

of 1943, as American bombers fought their way to deeper targets beyond escort range, losses increased dramatically. By late summer, the VIII Bomber Command was finally capable of generating formations of 300 aircraft, but by then the Luftwaffe countered with even more additional defensive capabilities such as the Me-110 armed with rockets and aerial mines.⁸⁶ By June, losses routinely exceeded ten percent, and the first Schweinfurt raid on 17 August suffered a catastrophic 32.7 percent loss rate, more than six times what was considered sustainable.⁸⁷

This spike in aircraft losses was a wake up call for General Arnold. According to Bernard Boylan in his Air Force Historical Study, *The Development of the Long Range Escort Fighter*, “the increased rate of bomber losses, coupled with his own conviction that the solution to the daylight bombing problem was inextricably tied to the problem of providing bombers with long-range escort, prompted Arnold to send an ultimatum to Giles [Major General Barney Giles, Director of Requirements for the Air Staff] on 28 June.”⁸⁸ Arnold told Giles, “Get to work on this right away because by January, ‘44, I want a fighter escort for all of our bombers from the United Kingdom into Germany.”⁸⁹ The finality of this order suggests Arnold’s determination to ensure unfettered strategic bombing in 1944, and reflects his concern that these losses would jeopardize plans for a cross-channel invasion.⁹⁰ In any event, “the Arnold ultimatum set in motion the most important Air Force technical development program in 1943.”⁹¹ By January of 1944, this effort would produce a solution to the problem, the very successful P-51.⁹²

Yet, the results of this effort were far in the future. In the hope that the strategic bombing campaign could push through this difficult period and end the war sooner, Eaker rationalized that increased German aerial opposition might be the final stand of an enemy struggling under catastrophic, strategic, aerial attack. By the fall, he was unable to deny the severity of losses, but he emphasized in a letter to Arnold that “This does not represent disaster; it does indicate that the air battle has reached its climax.”⁹³

⁸⁶ Boylan, *AFHS* 136, 99; Haywood S. Hansell, *The Air Plan that Defeated Hitler* (Atlanta, GA: Higgins-McArthur/Longino & Porter, Inc., 1972), 125.

⁸⁷ Boylan, *AFHS* 136, 89-90, 97.

⁸⁸ Boylan, *AFHS* 136, 91.

⁸⁹ Henry H. Arnold, Memo for Giles, 28 June 1943, Part 1, AFHRA 202.2-11.

⁹⁰ United States Air Force Historical Division, *The War Against the Luftwaffe: AAF Counter-air Operations April 1943 – June 1944* (Maxwell AFB, AL: Air University, 1944), 77. (Also known as *USAF Historical Research Study No. 110*)

⁹¹ Boylan, *AFHS* 136, 91.

⁹² Boylan, *AFHS* 136, 146-161.

⁹³ Ira C. Eaker, Letter to Arnold, 15 Oct 43, Eaker Papers, Library of Congress, quoted in Boylan, *AFHS* 136, 105.

Consequently, VIII Bomber Command continued deep, unescorted penetrations, while Eaker's supporters framed the issue as a question of resolve and sustainable attrition. Air Chief Marshal Sir Charles Portal, speaking in support of Eaker, argued that "if we do not now strain every nerve to bring enough force to bear to win this battle during the next two or three months but are content to see the Eighth Bomber Command hampered by lack of reinforcements just as success is within its grasp, we may well miss the opportunity to win a decisive victory against the German Air Force which will have incalculable effects on all future operations and on the length of the war."⁹⁴ Taking these circumstances into account, Eaker judged how much attrition he believed was tolerable. If the United States was normally willing to accept five percent attrition, wasn't it rational to risk even higher losses to destroy a target whose destruction might end the war? Hence when the Assistant Secretary of War, Robert A. Lovett suggested that a "15% loss over Schweinfurt is actually only equivalent to three days operations at 5%" it was logical for Eaker to conclude that it was still in the best interest of the Allied war effort to continue attacking high priority targets inside Germany, even when they were beyond the range of escort.⁹⁵

However, the wastage of 60 more bombers over Schweinfurt on 14 October 1943 changed the rational equation. The cumulative loss of 120 bombers over a single target was difficult to accept. In his memoirs, *Global Mission*, Arnold admitted his doubts that the VIII Bomber Command could have continued under such extreme loss rates.⁹⁶ Yet, Eaker showed no discouragement, claiming, "We are convinced that when the totals are struck yesterday's losses will be far outweighed by the value of the enemy material destroyed."⁹⁷

However, after this mission, the nature of VIII Bomber Command efforts changed. "The Eighth made no more deep penetrations, even in clear weather, into Germany for the rest of the year," and Eaker's attitude changed as well.⁹⁸ In a letter to Giles, he wrote, "We are not justified in striking at them [the Germans] unless the conditions augur success. These deep penetrations and the impossibility of fighter escort will cost us 80 to 120 bombers. We will suffer this loss any time we penetrate in force to those targets."⁹⁹ The VIII Bomber Command continued strategic bombing missions, but excursions beyond the range of escort ended. For a short time in

⁹⁴ Quadrant Conference Proceedings, quoted in Parton, "Air Force Spoken Here", 305.

⁹⁵ Parton, "Air Force Spoken Here", 306.

⁹⁶ Henry H. Arnold, *Global Mission* (London: Hutchinson & Co. Ltd., 1951), 495.

⁹⁷ Letter, Eaker to Arnold, 15 Oct 43, Eaker Papers Library of Congress, quoted in Boylan, *AFHS* 136, 105.

⁹⁸ Boylan, *AFHS* 136, 105.

⁹⁹ Ira C. Eaker, Letter to Giles, 13 Dec 43, Eaker Papers, Library of Congress, quoted in Boylan, *AFHS* 136, 105.

late 1943, P-38s escorted bombers into Germany, with some success. Nevertheless, HAPDB against critical targets deep in Germany was generally delayed until the spring of 1944 when the P-51 with drop tanks became widely available.¹⁰⁰ In the end, the de facto doctrine that large bomber formations could overwhelm enemy defenses was tested and failed. From its inception, through its popularization, questioning, and execution, the Rational Actor perspective provides key insights and explanations for the behavior of the Air Corps and later the USAAF. Clearly, a sequence of bureaucratic decisions by various leaders, made on behalf of the Air Corps for the ostensible good of the nation, and victory in war, eventually culminated in a realization that the cost imposed by concentrated aerial defenses could outweigh the strategic impact of long range bombers. It took the crucible of World War II and the desperate battle for control of the sky over Europe to convince the USAAF that the bomber was not invincible. However, under those trying circumstances, the rational choice of alternatives only partially explains why it took until early 1944 for American forces to recognize and correct for this increasingly painful and obvious problem. Another perspective can bolster our understanding of the situation.

¹⁰⁰ Boylan, *AFHS 136*, 107.

CHAPTER 2

The Organizational Behavior Perspective

One weakness of the Rational Actor paradigm is its inability to account for the bureaucratic nature of government. Fortunately, an alternative model, known as the Organizational Behavior (OB) perspective provides additional insight. This view portrays governmental actions as the product of outputs generated by constituent organizations. Clearly, mission and allotted power constrain military organizations, but beyond that, capabilities and culture shape their outputs. For example, if one asks an Air Force representative how to best solve a problem, they would likely suggest a solution involving aircraft. This predisposition results from an organizational tendency to use a narrow repertoire implemented through standard operating procedures. It also produces somewhat predictable results, reflecting incremental changes in procedure (only as large as necessary) to resolve problems in the order they present themselves. As a result, long-term outputs tend to accrue the traditional elements of the organization that produced them. The OB paradigm simply recognizes this predilection, and attempts to account for its influence on history.¹⁰¹

This paradigm is particularly apropos for understanding how and why the USAAF got to the point where they tried, and subsequently abandoned unescorted bombing missions into Germany. In this situation, the OB model can be applied on several levels. First, the War Department constitutes a major organization within the American government, charged with achieving victory against the Axis powers. However, several intermediate groups existed within that structure. The United States military's mission of effectively employing American air power fell to the USAAF, while the task of utilizing air power from England to defeat Germany went to the Eighth Air Force.¹⁰² At these levels, the OB paradigm obviously influences the organizations directly responsible for the development and execution of World War II bomber doctrine.

Two particular organizations bear responsibility for the implementation of invincible bomber doctrine. The Air Corps Tactical School (ACTS) created doctrine before the war, and the VIII Bomber Command executed the strategic bombing campaign against Germany based on

¹⁰¹ Graham Allison and Phillip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, Second Edition (New York: Longman, 1999), 143.

¹⁰² David R. Mets, *Master of Airpower* (Novato, CA: Presidio Press, 1988), 116.

that doctrine.¹⁰³ The behavior of both these organizations clearly displayed the characteristic of incremental change and conditioned output predicted by the OB model, therefore, reinforcing its importance. An appreciation for this perspective helps explain an otherwise incomplete understanding of this critical chapter in airpower history.

The Impact of Organizational Behavior on the Evolution of Doctrine

In the crucible of World War I, military aviation matured quickly. The war's aftermath made certain lessons clear, providing a point of departure for further development of American military aviation. In World War I, air superiority established itself as an essential for the emerging mission areas of aerial observation, artillery spotting and bombing. Although both sides toyed with the idea of strategic attack, neither proved very capable.¹⁰⁴ Consequently, efforts refocused on support of ground forces.¹⁰⁵ To support ground forces on the front lines, adversaries battled for air superiority through air-to-air engagements. Although lethal, American airmen dismissed ground-based defenses as a generic risk distributed throughout enemy territory, while they considered airborne adversaries predators that could not be ignored.¹⁰⁶ When compared to the hellish reality of trench warfare, aerial combat seemed chivalrous. After the war, this perception lingered and served to bolster popular support for the fledgling military aviation community in the United States.¹⁰⁷

The unprecedented destruction of the Great War caused a general revulsion against land warfare that presented an opportunity for competing theories of war to emerge. In particular, theorists and zealots saw great potential for airpower to be decisive in war, thus avoiding the carnage of ground confrontations. Among the first to articulate the theory of strategic attack in print was Douhet. The chief proponent of this vision of warfare, in the United States, was Billy

¹⁰³ David E. Johnson, *Fast Tanks and Heavy Bombers: Innovations in the U.S. Army, 1917-1945* (Ithaca, NY: Cornell University Press, 1998), 155; Bernard L. Boylan, *The Development of the Long-range Escort Fighter* (Ph.D. diss., University of Missouri, 1955), 54. (Also known as USAF Historical Research Study No. 136).

¹⁰⁴ James P. Tate, *The Army and Its Air Corps: Army Policy toward Aviation, 1919-1941* (Maxwell AFB, AL: Air University, 1998), 2. For more on this issue in World War I, see George K. Williams, *Biplanes and Bombsights Bombsights: British Bombing in World War I* (Maxwell AFB, AL: Air University Press, 1999).

¹⁰⁵ Thomas H. Greer, *The Development of Air Doctrine in the Army Air Arm: 1917-1941*, (Maxwell AFB, AL: Air University, 1953), 3-13. (Also known as USAF Historical Research Study No. 89)

¹⁰⁶ William Mitchell, *Winged Defense* (New York: Dover Publications, Inc., 1925), 199, 204.

¹⁰⁷ Tate, *The Army and Its Air Corps*, 4. Also see Linda R. Robertson, *The Dream of Civilized Warfare* (Minneapolis, MN: University of Minnesota Press, 2003).

Mitchell.¹⁰⁸ His legendary efforts to promote air power and secure independence for the Air Service, served to spur the development of the Air Corps.

After several years of struggle, the creation of the United States Army Air Corps in 1926 signaled the birth of an organization representing the interests of American airmen. As with many developing organizations, the Air Corps associated its institutional health with autonomy.¹⁰⁹ Increasingly, Air Corps members and supporters saw the need for a separate air force, resulting in a drive for service independence. This desire, reflected in struggles for budgetary growth and increased responsibility, also manifested itself in competitions with the Navy. Through a series of battles played out in Congress and the Executive Branch, airmen sparred with Navy leadership over the role of carrier aviation and responsibility for coastal defense.¹¹⁰ Although no clear winner emerged in these disputes, they served to elevate the standing of the Air Corps, bolstering the case for a co-equal and independent service, and stimulating the development of doctrine.

During this period, the Air Service Tactical School (ASTS), and later the ACTS had the responsibility of creating air doctrine. Although transformation was slow, incremental changes eventually worked their way into the doctrinal core of the Army, resulting in a self-sustaining reaction. Since the 1920s, the Army's official position, as reflected in its training and field manuals, focused on the role of the Air Corps in the destruction of the enemy army.¹¹¹ However, according to Thomas H. Greer in his USAF Historical Study, *The Development of Air Doctrine*, "The Air Corps, and especially the faculty of the Tactical School, moved further and further in the strategic direction."¹¹² Even though the War Department consistently lagged behind the forward leaning position of the Office of the Chief of the Air Corps (OCAC), Army reorganization gave rise to a series of high profile investigative boards that eventually led to incorporation of strategic aerial attack doctrine. The Drum Board in 1933 and the Baker Board in 1934, both opposed Air Corps independence, but allowed for the creation of an autonomous aerial operations division called the General Headquarters (GHQ) Air Force, implemented in 1935.¹¹³ During this period, successive versions of ACTS texts show the growing dominance of

¹⁰⁸ Although translated versions of Douhet's book *The Command of the Air* were rare in the United States before World War II, there is a close correlation with Mitchell's ideas, and Douhet is generally credited as the originator of strategic bombing theory.

¹⁰⁹ Allison and Zelikow, *Essence of Decision*, 181.

¹¹⁰ Greer, AFHS 89, 34-36, 69, 90-91.

¹¹¹ Greer, AFHS 89, 56.

¹¹² Greer, AFHS 89, 56.

¹¹³ Greer, AFHS 89, 72-73.

strategic thinking within the school, and a defiant belief that airpower could produce decisive results independent of the Army. These bold doctrinal assertions culminated in the 1933-1934 *Bombardment* text that asserted, “Bombardment aviation, properly employed, can shatter a nation’s will to resist; it can destroy the economical and industrial structures which made possible the very existence of modern civilization.”¹¹⁴ The ultimate expression of this organizational exuberance, finally realized after several years and a major war, was USAF independence.

From an OB perspective, growing independence sets up an important choice. As a branch of the Army, the capabilities of the air arm inevitably received secondary priority in relation to the strong institutional support given to ground forces. If the, as yet unproven, theory of decisive aerial warfare was to have any hope of establishing itself as an alternative way to win a war, it needed sponsorship from an independent organization. Although the Army was unwilling to completely surrender control of air forces in a radical separation, evolutionary changes eventually produced the next best result.

By March of 1942, just four months after the United States entered World War II, the airmen of the United States Army finally achieved parity within the War Department. Following the creation of a separate Air Corps in 1926, and the GHQ Air Force in 1935, it took six more years of struggle to consolidate those organizations and form the Army Air Forces (AAF) in June of 1941.¹¹⁵ Beyond that, after the start of the war, Congress used the sweeping authority of the War Powers Act to declare the AAF a co-equal command with powers equivalent to the Army Ground Forces, and requiring a separate chief of staff.¹¹⁶ This transformation of the basic air organization eventually leveled the playing field, allowing for a test of decisive aerial bombardment. The effort to gain service independence made this possible, but it also produced an unanticipated side effect: the invincible bomber doctrine.

To draw the connection between the emerging independence of the American military air arm and the entrenchment of the invincible bomber idea, it is helpful to recognize the impact of organizational behavior. In the late 1920s and early 1930s, the Air Corps focused on how to break free from Army control. Even though the Great War illustrated the necessity of air superiority, the Air Corps soon recognized the incompatibility of its doctrine. Independence required a decisive mission rather than a supporting role, and strategic bombing had that

¹¹⁴ *Bombardment*, ACTS text, 1933-1934, AFHRA 248.101.9.

¹¹⁵ Greer, *AFHS* 89, 127.

¹¹⁶ Phillip S. Meilinger, *Significant Events in Air Force History* (Washington D. C.: GPO, 2003), 19.

potential. From the OB perspective, this single-minded pursuit of independence had the effect of squeezing out other missions.

Even if a particular type of mission had the potential to complement strategic attack, the Air Corps suppressed its prominence. This was particularly true of pursuit aviation with respect to escort operations. According to historian Robert T. Finney, “Instructors at ACTS have been criticized for not sensing the need for a long-range escort plane.”¹¹⁷ However, this is not surprising when considered from an OB perspective. Viewing bomber and pursuit factions of the ACTS faculty as parochial adversaries, involved in a zero sum game, provides great insight. Maj Gen Walter Frank’s statement, as an air umpire during a 1933 exercise, that “It is impossible for fighters to intercept bombers and therefore it is inconsistent with the employment of the air force to develop fighters,” revealed the depth of this organizationally induced myopia.¹¹⁸ According to Brig Gen Haywood Hansell, an ACTS instructor at the time, the rift between the bombardment and pursuit sections “resulted in a stubborn blindness that denied the need for mutual assistance.”¹¹⁹ Consequently, despite the potential for cooperation, the key doctrinal role of the bomber, justifying the Air Corps fight for independence, also led to the over-inflation of bomber capability, and a commensurate reduction in the perceived need of pursuit aviation.

Even so, the institutional inertia of an organization is difficult to overcome. Since pursuit had dominated Army aviation during the early and mid-1920s, bomber adherents did not gain real preeminence until the budgetary famine caused by the Great Depression, starting in 1929. The resulting fiscal constraints transformed a gradual reorientation of the Air Corps into a full-fledged conversion. As interpreted by David E. Johnson, “Air officers knew that appropriations would be scarce and that the doctrine that prevailed would probably receive what little funding was available.”¹²⁰ This environment forced the Air Corps to sequence their plans, delaying the development and acquisition of secondary priorities; “obviously pursuit aviation suffered.”¹²¹ In effect, these fiscal realities, coupled with the doctrine of strategic attack, facilitated the fundamental reorganization of American military aviation by placing the bomber at the center of both mission and doctrine.

¹¹⁷ Robert T. Finney, *History of the Air Corps Tactical School, 1920-1940* (Washington D.C.: Center for Air Force History, 1992), 277. (Also known as *USAF Historical Study No. 100*).

¹¹⁸ Statement by Walter Frank, quoted in Claire Lee Chennault, *Way of a Fighter: The Memoirs of Claire Lee Chennault* (New York: G. P. Putnam’s Sons, 1949), 22.

¹¹⁹ Haywood S. Hansell, Air War College Lecture, 16 Feb 51, quoted in Boylan, *AFHS 136*, 15.

¹²⁰ Johnson, *Fast Tanks*, 157.

¹²¹ Boylan, *AFHS 136*, 14.

As a direct consequence, the bomber enjoyed a period of unchallenged primacy during the early and mid-1930s. Some typical organizational behaviors were directly responsible for this situation and reinforced each other. During these years of bomber hegemony, an informal network of bomber disciples coalesced and effectively defined the norms of acceptable performance within the Air Corps.¹²² This behavior had the typical organizational effect of subconsciously limiting the range of acceptable alternatives for major decisions.¹²³ Even when weaknesses were recognized, another characteristic behavior, institutionalized planning, often resulted in valid suggestions never being implemented.¹²⁴ Finally, the systemic domination of the bomber mission led to an intellectual transformation within the Air Corps that romanticized bomber operations, creating an organizational culture supporting that paradigm.¹²⁵ Through these types of behaviors, the bomber became the organizational focus of the Air Corps.

As the strategic bombing mission grew in prominence, leading advocates and theorists received promotion. Eventually, bomber advocates permeated the centers of power within the Air Corps and used their new positions to control the direction of the organization. Through their common experience at the ACTS, future Air Corps leaders like Oscar Westover, Carl Spaatz, Ira Eaker, and many more, grew to share a common vision of the Air Corps dominated by the invincible bomber doctrine.¹²⁶ Once established, this network started shaping Air Corps policy.

One subtle method of affecting that policy involved the tendency to limit the range of available alternatives. In the interest of Air Force independence, bomber advocates crafted and promoted evidence supporting bomber invincibility, while suppressing contrary opinions from the ACTS Pursuit Division. For example, General Westover, then chief of the Air Corps, cited an exercise as evidence that bombers could not be effectively targeted by pursuit aircraft, yet the participating pursuit aircraft were outdated and received no assistance from early warning networks like those commonly in use by potential enemies.¹²⁷ Furthermore, the collective opposition of bomber adherents on the staff crushed Claire Chennault's vehement arguments against the invincible bomber proposition. According to Laurence S. Kuter, also a future USAAF general and an ACTS instructor at the same time as Chennault, "We just overpowered

¹²² Allison and Zelikow, *Essence of Decision*, 168.

¹²³ Allison and Zelikow, *Essence of Decision*, 164-165.

¹²⁴ Allison and Zelikow, *Essence of Decision*, 180-181.

¹²⁵ Allison and Zelikow, *Essence of Decision*, 167.

¹²⁶ Finney, *History of the Air Corps Tactical School*, 115-141.

¹²⁷ Chennault, *Way of a Fighter*, 22, 20.

Claire; we just whipped him.”¹²⁸ Such successes reflected a growing hubris within the organization, with the result that even when accepting criticism, the Air Corps failed to follow through on corrections.

During the 1930s, the Air Corps institutionalized its long range planning, creating the appearance of well-considered alternatives and attention to concerns, without any real, long-term adjustment. Common aerodynamic assumptions that favored the performance of large aircraft remained unchallenged. Rather than trying unconventional solutions, engineers who were asked to investigate the possibility of designing a long-range escort fighter simply regurgitated the conventional wisdom that an aircraft with range comparable to a bomber could not possibly have the speed and maneuverability required for a fighter. In July of 1935, the Air Corps Board concluded, “that any attempt to cover both fields with one airplane would... result in extremely unsatisfactory performance for both functions.”¹²⁹ The result was the repeated recognition that a long-range escort was necessary without any consistent effort to produce a suitable aircraft. At another meeting of the Air Corps Board in late 1939, it recognized that “pursuit protection for long-range bombers during daylight operations against objectives known to be defended by pursuit, is of great tactical importance.” Nevertheless, despite the obvious applicability of this technology to high altitude, precision daylight bombing (HAPDB) doctrine, the board only recommended that, “the pertinent technical problems incident to the provision of such protection merit thorough investigation.”¹³⁰ Furthermore, when tasked with developing part of the American industrial production plan, just before World War II, the Air War Plans Division acknowledged the importance of a long-range escort, but gave the project low priority.¹³¹ These examples of institutional planning created the appearance that corrective action was in the works, while they actually fostered vulnerability. Consequently, since no viable alternative was available, the proposition that bombers were invincible retained its preeminent position in Air Corps culture.

Over a period of years, a new culture that reinforced the service domination of bombers replaced the romantic image of dueling World War I fighter pilots, prevalent in the 1920s. During the period of overwhelming bomber ascendancy in the early and mid-1930s, the Air Corps experienced a cultural realignment that elevated the bomber to a revered position, while

¹²⁸ Laurence S. Kuter, Oral History Interview, quoted in Johnson, *Fast Tanks*, 166.

¹²⁹ *Multi-engine Fighter Aircraft*, Report of the Air Corps Board, Study #2, 15 July 1935, AFHRA 167.5-2.

¹³⁰ *Firepower of Bombardment Formations*, Report of the Air Corps Board, Study #53, 3 January 1940, 5, AFHRA 167.5-53.

¹³¹ Boylan, *AFHS* 136, 35, 38.

pursuit aviation reached its nadir. According to Claire Chennault, an outspoken fighter advocate, it was “the bomber boys who controlled the development of the Air Corps at that time.”¹³² Carl Builder, author of *The Masks of War*, reinforces the importance of this cultural hegemony when he states that “the dominant concepts of war held by military institutions have a significant effect upon the kinds of forces they acquire and train and, therefore, upon the kinds of wars they are prepared to fight.”¹³³ In this light, it is easy to see how organizational behavior supported the Air Corps’ proclivity for strategic bombing, and its attendant theories.

It is not surprising that this one-sided environment gave rise to the extreme doctrine of bomber invincibility. In fact, from an OB perspective, several factors combined to make this theory seem eminently reasonable. Although the airpower theories of Giulio Douhet were not well known in the United States before World War I, some European airmen had taken notice. While first contemplated in World War I, rudimentary technology hampered reliable strategic bombing until “in 1917 some question remained as to the feasibility of continued daylight bombing operations in view of heavy losses inflicted on Allied bombing forces by enemy pursuit.”¹³⁴ However, when United States bomber capability surged in the early 1930s, Douhet’s ideas enjoyed a renaissance. Some aspects, such as Douhet’s penchant for attacking civilians, were downplayed and adjusted to accommodate American sensitivities, but his unmitigated belief in the supremacy of the bomber found a sympathetic audience.¹³⁵

In addition to this shift in thinking, there were several contextual issues that exaggerated the disparity between bomber and fighter performance. By 1935, the American defense industry had produced and flown the impressive B-17 prototype that easily outclassed fighter aircraft, such as the P-36, the best American model in front line service at the time.¹³⁶ The XB-17, first flown in August of 1935, had a top speed of 251 miles per hour while the P-36A, which debuted only six months prior, had only a marginal speed advantage.¹³⁷ Its maximum speed was about 300 miles per hour.¹³⁸ In his study on the development of air doctrine, Greer quotes ACTS instructor Clayton Bissell, “Pursuit could not neutralize bombardment... unless it enjoyed a

¹³² Chennault, *Way of a Fighter*, 25.

¹³³ Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore: The Johns Hopkins University Press, 1989), 3.

¹³⁴ Boylan, *AFHS* 136, 6.

¹³⁵ Greer, *AFHS* 89, 57.

¹³⁶ Greer, *AFHS* 89, 46-47, 58.

¹³⁷ A fully loaded B-17 flew considerably slower than the aircraft’s maximum speed. Johnson, *Fast Tanks*, 162.

¹³⁸ Greer, *AFHS* 89, 65.

speed advantage of 40 to 50 percent.”¹³⁹ Since the P-36 was the most advanced American fighter at the time, this comparison, no doubt, helped reinforce the impression of bomber superiority. However, unbeknownst to American bomber zealots, the inspired fighter designs of Willy Messerschmitt and R. J. Mitchell would soon produce a tremendous boost in fighter performance, with the advent of the Bf-109 and the Spitfire in Germany and Britain respectively.¹⁴⁰

Additionally, technological advances invalidated two of the basic premises of American bombing doctrine. First, the invention of radar greatly enhanced the efficiency of early warning networks, shattering the presumption that bombers could attack without warning. As General Hansell summarized years later, “If our air theorists had had knowledge of radar in 1935, the American doctrine of strategic bombing in deep daylight penetrations would surely not have evolved.”¹⁴¹ Second, it was presumed that the only significant threat to bombers was from attacking aircraft, because bombing from altitude would insulate the aircraft from ground fire. Based on Mitchell’s teachings, derived from the First World War, “the Air Service believed that losses from ground fire would be rare.”¹⁴² Failing to appreciate both technological advances and a commitment to this type of air defense by potential adversaries, as demonstrated by German developments in the 1930s, this belief persisted in America until the start of World War II.¹⁴³ Even then, air planners insisted that despite the proven effectiveness of German antiaircraft artillery, a combination of speed and high altitudes would provide adequate protection for deep penetrations into Germany.¹⁴⁴ Combining these faulty presumptions with the apparent disparity between new bomber designs, and fighters flown without the advantage of radar early warning, the Air Corps seemed temporarily justified in its conviction that bombers were invincible.

After all, once established, these opinions produced organizational inertia, working to resist future change. After the bomber fought its way to the top of the pecking order, it became entrenched. Typical of dominant organizational concepts, bomber invincibility proved overwhelmingly resilient until a catastrophic event elicited drastic change.¹⁴⁵ Indeed, this concept of operations remained prevalent, until it faltered under the strain of the strategic

¹³⁹ Greer, *AFHS* 89, 82.

¹⁴⁰ Paul Jacobs and Robert Lightsey, *Battle of Britain Illustrated* (New York: McGraw-Hill, 2003), 85-89, 99-104.

¹⁴¹ Jacobs and Lightsey, *Illustrated Battle of Britain*, 104-107.

¹⁴² Greer, *AFHS* 89, 31, 38.

¹⁴³ Edward B. Westermann, *Flak: German Anti-Aircraft Defenses, 1941-1945* (Lawrence, KS: University of Kansas Press, 2001), 69-71, 71-74.

¹⁴⁴ Greer, *AFHS* 89, 125.

¹⁴⁵ Allison and Zelikow, *Essence of Decision*, 172.

bombing campaign against Germany. A variety of distinctive behaviors characterized this period of bomber dominance.

The development of a standard repertoire by the Air Corps provides one obvious example of the organizational behavior model during the 1930s. During this time, the ACTS developed and enshrined the doctrine of HAPDB, as a military panacea. Within that framework, unproven concepts, such as the capability of bombers to adequately defend themselves without assistance, were accepted as a given. As doctrine coalesced into dogma, strategic bombing became the Air Corps' *raison d'être*.

The theory of bomber invincibility shaped the pre-World War II debate over how to employ bombers. Even as doubts about bomber survivability surfaced, limited organizational flexibility prevented wholesale change by insisting on a demonstrated need before pursuing the development of enabling technology such as an adequate long-range escort fighter.¹⁴⁶ This set up a situation in which the true scope of American bomber vulnerability remained hidden, leading to a *de facto* assumption of bomber invincibility until shown otherwise. Thus even when doubts surfaced, they were couched in terms of percentage of expected losses, insinuating that a certain amount of wartime "wastage" was expected, and manageable.¹⁴⁷ By establishing this extreme standard, debate allowed for only minor deviations from that conclusion. Thus, in a tip of the hat to Douhet, large bomber formations, defending themselves became the expected operating method for American Air Forces, with a high expectation for success. From an organizational behavior perspective, Air Corps leaders could not fathom a large change in the expected vulnerability of their bombers. A small variation from their expectation of bomber invincibility was the most they could accept.

From an OB perspective, change usually occurs incrementally, "within the worldview of the organization's culture."¹⁴⁸ This still allows for incremental change, but each modification is strenuously resisted through inertia. As a result, the organization addressed complaints and made minor doctrinal modifications, but the overall invincible bomber precept changed very little. Instead of a critical re-evaluation of assumptions, OB produced a slow transformation. Even as airmen observed the aerial lessons of the late 1930s and early World War II period, there was no fundamental change in Air Corps policy. The Spanish Civil War demonstrated the

¹⁴⁶ Boylan, *AFHS* 136, 19.

¹⁴⁷ *Tactical Doctrine in Employment of Bombardment Aviation*, Plan for Bomber Command and Constituent Units to Arrive in U.K. in 1942, Annex, Part V, 1942, 2-3, AFHRA 142.044E.

¹⁴⁸ Allison and Zelikow, *Essence of Decision*, 171.

vulnerability of unescorted bombers, yet American airmen chose to question the applicability of the evidence rather than consider potential remedies. Since they believed that this conflict was not “a real test of modern airpower,” the Army “saw nothing in the aerial warfare in Spain... to suggest the advisability of change in its own doctrine.”¹⁴⁹ Eventually the preponderance of critical evidence convinced many leaders, like Arnold, that bombers were vulnerable. Nevertheless, arguments that the bomber would get through easily placated this newfound pessimism concerning survivability. In a letter written shortly before the start of American bomber operations in Europe, General Eaker, trusted subordinate and commander of the VIII Bomber Command, sought to assuage General Arnold’s growing doubts:

It will interest you to know that several months ago when the date of our entering operations seemed far away, a great many people told us that day bombing could be done by well trained crews and airplanes despite the stiffness of fighter opposition. As the hour approaches for the test, with the chips down, a lot of these people have grown luke warm [sic] or actually deserted our camp. Tooey [Spaatz] and I however, remain steadfast in the belief that it can and must be done.¹⁵⁰

Just a few weeks later, Arnold was apparently convinced that initial “Eighth Air Force Operations had shown the validity of American bomber doctrine.”¹⁵¹ However, further examination, from the OB perspective, reveals that USAAF bomber doctrine at the start of World War II, was far from robust, and was actually propped up to mask its frailty.

Invincible bomber doctrine lasted as long as it did in part because incremental improvements in technology and operational practice obscured potential vulnerabilities. For example, technical improvements often had the effect of relieving pressure for large-scale doctrinal re-evaluation, thus extending the conceptual viability of the self-defending bomber. According to General Arnold, the P-38, designed in 1936 but first flown in January of 1939, did “a fine job from North Africa in escorting our B-17s 400 miles or more.”¹⁵² Yet, Eaker considered escort desirable but not a strict requirement. His three-phased approach to attacking Germany, proposed in the fall of 1942, envisioned reduced need for escort as the bomber force

¹⁴⁹ Greer, *AFHS* 89, 102; Wesley Frank Craven and James Lea Cate, *The Army Air Forces in World War II*. Vol. 1, *Plans and Early Operations, January 1939 to August 1942* (Chicago: The University of Chicago Press, 1948), 84.

¹⁵⁰ Henry H. Arnold, Letter to Eaker, Library of Congress, Arnold Papers, 8 August 42, quoted in Johnson, *Fast Tanks*, 173.

¹⁵¹ Henry H. Arnold, Letter to Hopkins, Library of Congress, Arnold Papers, 8 September, 42, quoted in Johnson, *FT & HB*, 174.

¹⁵² Henry H. Arnold, Letter to Giles, 28 June 43, AFHRA 202.2-11.

became more dominant. In the final phase of this plan, Eaker called for “mass bombing tactics without the assistance of escorting fighters.”¹⁵³ Clearly, Eaker viewed escort as a helpful adjunct to strategic bombing doctrine, bolstering it against a temporary vulnerability until his force was large enough to operate autonomously. This outlook introduced a caveat to bomber theory, but it also allowed the Air Corps to retain its organizational doctrine favoring the bombers.

Without fully incorporating long-range escort into American bomber doctrine, the Air Corps needed further incremental adjustments to prevent an erosion of capability against the resurgent Luftwaffe in 1943. To aid the American strategic bombing effort in Europe, without completely dismantling core doctrine, Arnold and Eaker pressed for larger bomber formations, as well as increased defensive firepower to mitigate attrition.¹⁵⁴ In short, it seems that the dominant Air Corps attitude reflected the belief that established doctrine required some fine-tuning, but major revisions were not necessary. This idea demonstrates the theoretical concept that the complexity of organizational culture makes it extremely difficult to change.¹⁵⁵ Any major doctrinal change would have challenged organizational precepts and likely met stiff internal resistance. Organizationally, it was much easier for the Air Corps to reinforce current doctrine than to adopt new.

This organizational predilection for established doctrine, even in the face of contrary evidence, helps explain why the American air war plan did not match the most current thinking. By the late 1930s, the invincible bomber idea had thoroughly penetrated the culture of the Air Corps. As American involvement in World War II appeared increasingly likely, the Air War Plans Division (AWPD), in Washington, outlined the requirements for defeating the Axis powers. Not surprisingly, former ACTS instructors with a strong bomber bias dominated the influential AWPD.¹⁵⁶ Given only a week to complete their task, this group saw the opportunity to advance their organization.¹⁵⁷ From an organizational perspective, this combination of urgency and ambition created a situation that produced predictable results. The air annex to the American production plan was a product of “fractionated power.”¹⁵⁸ This characteristic organizational behavior occurs when a large group, such as the Army, cannot directly control all

¹⁵³ Ira C. Eaker, Letter to Spaatz, Spaatz Diary Extract, Library of Congress, quoted in Boylan, *AFHS 136*, 67.

¹⁵⁴ Barney M. Giles, Letter to Eaker, 30 July 43, AFHRA 168.491; Henry H. Arnold, Letter to Eaker, 1 Aug 43, AFHRA 168.491.

¹⁵⁵ Allison and Zelikow, *Essence of Decision*, 180.

¹⁵⁶ Johnson, *Fast Tanks*, 169.

¹⁵⁷ Martha Byrd, *Kenneth N. Walker: Airpower’s Untempered Crusader* (Maxwell AFB, AL: Air University Press, 1997), 66.

¹⁵⁸ Allison and Zelikow, *Essence of Decision*, 167.

of its constituent offices.¹⁵⁹ In this case, the War Plans Department of the Army willingly surrendered control of the air annex for America's revitalized aircraft production plan.¹⁶⁰

Once in charge, the AWPD built a plan that strayed from the newly approved, official Army doctrine in Field Manual (FM) 1-5, *Employment of Aviation of the Army* (published 15 April 1940), in favor of a conception that advanced the organizational agenda of the Air Corps.¹⁶¹ According to Harold George, the chief of the AWPD, "the strategic air mission which they had incorporated not only went counter to prevailing plans for the use of airpower but placed the Army's ground forces in a secondary role."¹⁶² Scarcely mentioning offensive air strikes, FM 1-5 first emphasized the aerial defensive, with the limited offensive efforts of "striking forces" aimed at enemy aviation.¹⁶³ In the place of this doctrine, the AWPD cadre inserted an organizationally attractive plan that used the familiar standard repertoire of the Air Corps to promise that, "if the air offensive is successful, a land offensive may not be necessary."¹⁶⁴

During 1939 and 1940, some airmen "began to rethink the basic concept of bomber invincibility."¹⁶⁵ Nevertheless, the established doctrine lagged. A combination of this delay and the stubborn adherence to the invincible bomber concept by AWPD philosophical leader, Kenneth Walker, resulted in a procurement plan that stressed bomber production at the expense of escort development.¹⁶⁶ The plan called for the construction of nearly 62,000 aircraft yet it only recognized a "possible need" for a long range escort and simply "recommended a research and development effort, not a crash program."¹⁶⁷ This approach virtually guaranteed that "airpower was to have its test," ensuring that any effort to attack Germany by air would depend almost exclusively on bombers.¹⁶⁸ Less than six weeks after it was approved, with little chance to revise or accommodate alternative opinions, the War Department implemented AWPD/1.

¹⁵⁹ Allison and Zelikow, *Essence of Decision*, 167.

¹⁶⁰ Byrd, *Walker*, 67.

¹⁶¹ Greer, *AFHS* 89, 113.

¹⁶² Byrd, *Walker*, 74.

¹⁶³ Greer, *AFHS* 89, 114.

¹⁶⁴ AWPD/1, Table 2, Section 2, Pt. 3, Appendix 2, 2, quoted in Johnson, *Fast Tanks*, 171.

¹⁶⁵ Byrd, *Walker*, 72.

¹⁶⁶ Byrd, *Walker*, 74.

¹⁶⁷ Byrd, *Walker*, 71; Johnson, *Fast Tanks*, 170.

¹⁶⁸ Byrd, *Walker*, 76.

An Organizational Behavior Perspective on Doctrinal Execution

From the outset of overt American participation in World War II, the organizational aspirations of the new Army Air Forces were vested in the strategic bombing campaign against Germany. According to the agreement reached at the Arcadia Conference in late December 1941, the Allies would pursue a Germany first strategy. With that in mind, strategic bombing had the potential for a decisive effect in the short term, especially when compared to the long preparation time required for a ground invasion. The VIII Bomber Command, based in England, received the mission of executing American HAPDB doctrine with the goal of defeating Germany. The approval of AWPD/1, and the creation of this new unit capped “a decade of doctrinal debate,” and converted it into a specific war plan.¹⁶⁹ Nevertheless, as the product of strategic bombardment theory, and heavily influenced by the organizational behavior of the Air Corps, VIII Bomber Command had to deal with the residual affects of the invincible bomber ideal. General Eaker played the key role in the organization. Tasked with setting up and leading the VIII Bomber Command, his actions and decisions directly reflected the United States Army Air Forces (USAAF) organizational behavior regarding bomber employment. His long-time affiliation with USAAF senior leaders such as Hap Arnold, and Eighth Air Force Commander Carl Spaatz provided him with ample insight into the high level workings of the organization, while his experience as an American observer in England during the Battle of Britain provided critical direct experience.¹⁷⁰ Yet, even with these impressive credentials, Eaker still faced a daunting challenge, especially from the perspective of OB.

Organizational Issues

Throughout 1942 and 1943, during the setup and initial attempts at strategic attack, VIII Bomber Command dealt with three major types of organizational issues. To begin with, the VIII

¹⁶⁹ Byrd, *Walker*, 76.

¹⁷⁰ Parton, “*Air Force Spoken Here*”, 32, 115, 121.

Bomber Command had to operate in an environment of extreme urgency. The USAAF senior leadership pressed the VIII Bomber Command to start bombing operations as soon as possible.¹⁷¹ Beyond that, a high level organizational conflict between the USAAF and the Royal Air Force exacerbated the urgency of American efforts. Finally, limited operational alternatives constrained organizational flexibility, while the typical organizational behavior of “problem-directed search” limited VIII Bomber Command’s range of acceptable solutions.¹⁷² Each of these issues had a major impact on the VIII Bomber Command’s execution of the American strategic bombing campaign and each was heavily influenced by the doctrine of the invincible bomber.

Urgency

As mentioned, there were two key stakeholders who increased organizational stress while trying to instill a sense of urgency in the American strategic bombing effort. Arnold was expert at stimulating his organization to impose stress on itself, hoping to quickly produce favorable results, and thus accomplish the mission sooner. To this end, he continually pressured his subordinate commanders. In a letter to Spaatz he wrote, “The strategic necessity for the immediate or early initiation of effective, aggressive American Air Force offensive operations becomes more and more apparent daily here.”¹⁷³ Additionally, a second factor multiplied this stress.

A high level organizational dispute between the USAAF and the RAF boiled down to a difference of opinion. The Allies disagreed over how best to employ strategic airpower. By early 1942, during the stand up of the VIII Bomber Command, the British had already developed a strong organizational bias against daylight precision bombing as a result of their combat experience. In a conversation with Arnold and Eaker, Air Vice Marshal Arthur T. Harris (chief of RAF Bomber Command) bluntly rejected the American doctrine saying, “I bloody well don’t think you can do it. We’ve tried it. We know. We’ve even tried it with your Fortresses.”¹⁷⁴ The British had tried and abandoned daylight bombing in favor of night area attacks. As a result, they viewed the American doctrine of HAPDB as misguided. In general, the British believed it

¹⁷¹ Parton, “*Air Force Spoken Here*”, 128.

¹⁷² Allison and Zelikow, *Essence of Decision*, 171.

¹⁷³ Parton, “*Air Force Spoken Here*”, 171.

¹⁷⁴ Parton, “*Air Force Spoken Here*”, 130.

would have been in the best interest of the war effort for the United States to follow their lead, causing Harris to implore Eaker, “Come join us at night. Together we’ll lick them.”¹⁷⁵

This folksy attempt at coercion, and Arnold’s impatience for aerial success, were symptoms of another characteristic organizational behavior: a proclivity for central coordination and control. Since “the necessity for coordination and the centrality of foreign policy to the welfare of the nation guarantee the involvement of government leaders in the processes of the organizations that share power,” it is not surprising to find evidence of direct intervention by government leaders in the application of American strategic bombing doctrine.¹⁷⁶ Both President Roosevelt and Prime Minister Churchill were, at times, directly engaged in attempting to direct the strategy employed by the VIII Bomber Command, as exemplified during the Casablanca conference in January 1943. At this meeting, Eaker needed to convince Churchill of the viability of American bombing doctrine.¹⁷⁷ In an outcome typical of OB, the VIII Bomber Command successfully resisted this half-hearted intervention, and continued to pursue HAPDB.

For the USAAF, this decision proved critical. A decision to shift away from daylight bombing would have endangered the organization. Without a separate and distinct mission from the Royal Air Force, there would have been little need for an independent American bomber command.¹⁷⁸ This challenge to organizational autonomy undoubtedly threatened the bomber centric USAAF. At Eaker’s level, the main byproduct of this institutional anxiety was the sense that VIII Bomber Command must make immediate progress toward its goals, or risk direct subjugation. The affect was an intense escalation of urgency as VIII Bomber Command struggled to become operational and effective. This added stress meant that long-term solutions were unattractive. Consequently, the Eighth Air Force gravitated toward a problem-directed search for a quick solution, scouring the USAAF standard repertoire for alternatives. Thus, options such as unescorted bomber penetration, even though unpalatable, increased in likelihood.

Organizational Self-Limitation

The second major area of organizational influence within the USAAF involved constraints on organizational flexibility. Notwithstanding the vehement British opposition to unescorted daylight bombing, there was a natural predisposition for VIII Bomber Command to

¹⁷⁵ Parton, “*Air Force Spoken Here*”, 130.

¹⁷⁶ Allison and Zelikow, *Essence of Decision*, 173.

¹⁷⁷ Parton, “*Air Force Spoken Here*”, 216-222.

¹⁷⁸ Craven and Cate, *AAF in WWII*, 298-302.

favor the self-defended bomber tactic because the USAAF had self-limited the options available.¹⁷⁹ Beyond the psychological resistance to doctrinal change, AWPD/1 imposed an organizational self-constraint as the blueprint for defeating Germany. When accepted, in September of 1941, this document committed the USAAF to HAPDB and set a baseline force structure for the VIII Bomber Command.¹⁸⁰ AWPD/1 called for the production of nearly 4,000 bombers, yet comparatively few fighters (10 Groups) and “only 13 test model fighters to accompany them.”¹⁸¹ This imbalance led to a situation in which increasing numbers of bombers were fielded and ready for use, without a viable long-range escort option. In this light, unescorted bomber missions by the VIII Bomber Command were simply an example of a unit doing its best to execute its mission with the resources available. In essence, the early decisions of AWPD/1, so necessary to energize the VIII Bomber Command, also had the side effect of forcing Eaker to rely on outdated pre-war doctrine. Meanwhile, as bomber losses accumulated, it became harder for the USAAF to deny there was a problem.

Problem-Directed Search

Although the simple purpose for creating VIII Bomber Command centered on “the destruction of vital enemy targets,” there were a number of variables that affected that goal, and they all had to be managed.¹⁸² In particular, “The policy governing the employment of this force depended on the number and type of aircraft available and their effective ranges; effect of enemy opposition and American wastage rates; types of targets to be destroyed and their location; weather; range and effectiveness of escort fighters, and the training rate of initial combat teams and their replacements.”¹⁸³ Keeping OB in mind, any deviation from the expected values for these variables was a problem requiring attention. To solve problems, organizations tend to search for alternatives to avoid undesirable consequences. According to Allison and Zelikow, “The style of search and its stopping point are largely determined by existing routines,” and reflect institutional biases resulting in a propensity for superficial remedies.¹⁸⁴ In short, organizations look to solve their problems by applying their available expertise, regardless of how appropriate the response.

¹⁷⁹ Parton, *AAF in WWII*, 190.

¹⁸⁰ Greer, *AFHS 89*, 125-126.

¹⁸¹ Byrd, *Walker*, 73.

¹⁸² Boylan, *AFHS 136*, 54.

¹⁸³ Boylan, *AFHS 136*, 54.

¹⁸⁴ Allison and Zelikow, *Essence of Decision*, 171.

The VIII Bomber Command was created, manned, and equipped to be a bomber organization; so it should have been expected that, when faced with a challenge, the organization first looked inward for solutions, concentrating on its resident capabilities. In late 1942, when attrition increased uncomfortably, the first remedies the VIII Bomber Command tried were homegrown.¹⁸⁵ Tighter formations with interlocking fields of defensive fire, and daily variance of strike routing were countermeasures that required no outside coordination.¹⁸⁶ Furthermore, Eaker believed that the programmed growth of his bomber force would eventually resolve the attrition issue.¹⁸⁷ A letter from the chief of the Air Staff, Gen George E. Stratemeyer, to Eaker, reveals, “You and I know they [heavy bombers] can be self-supporting and that the losses in formations of that size [72 aircraft per formation] will be small. We can take such losses, but we can’t take the losses that will occur when you go deep into Germany with small formations.”¹⁸⁸ This may have encouraged Eaker to believe that longer-term solutions were not worth pursuing. Robust solutions such as the development of a long-range escort fighter required extensive bureaucratic efforts from outside his organization, and provided little near-term relief. While it is generally perceived as wise for commanders to try to fix a problem themselves, this organizational behavior may have ultimately handicapped the Eighth Air Force by siphoning energy away from the consistent advocacy of a comprehensive solution.

In this case, the combination of these three organizational behaviors had an unfortunate effect. It is expected that wartime organizations will act with urgency, and it is also normal for a group’s capabilities to be predetermined by the availability of specialized equipment. Above all, it is normal, and even desirable, for an organization to try to fix its own problems. However, for VIII Bomber Command, these behaviors worked together to create a disastrous propensity for quick fixes. According to James Parton, Arnold repeatedly sent “gruff cables asking why so few heavy bombers had been in action in view of the substantial reinforcements he [Eaker] had just been sent.”¹⁸⁹ However, during the summer of 1943, Eaker found it difficult not to “suffer heavier losses than our rate of build up,” and the problem defied home remedies.¹⁹⁰ Without a viable alternative solution for unsustainable attrition, such as a long-range escort, the VIII

¹⁸⁵ Boylan, *AFHS* 136, 80.

¹⁸⁶ Boylan, *AFHS* 136, 87, 81; Parton, “*Air Force Spoken Here*”, 235.

¹⁸⁷ Parton, “*Air Force Spoken Here*”, 247.

¹⁸⁸ Boylan, *AFHS* 136, 85-86. There are numerous claims by Eaker, Spaatz and others that larger formations would decrease loss rates; this is just one example. Apparently this was a commonly held belief, evolved from the invincible bomber theory. It appears to stem from the idea that, given a fixed size adversary force, larger formations would suffer roughly the same number of losses, thereby decreasing the overall percentage of loss.

¹⁸⁹ Parton, “*Air Force Spoken Here*”, 271.

¹⁹⁰ Parton, “*Air Force Spoken Here*”, 234.

Bomber Command was forced into a doctrinal corner. Organizational behavior had fostered a situation where the VIII Bomber Command was forced down an unfortunate path, eventually resulting in a crisis.

Although the USAAF found it difficult to determine how effective their strategic attacks were, the crisis that developed during the late summer and fall of 1943, hinged on attrition. Less than a year after its first strategic bombing mission from England, the USAAF recognized that VIII Bomber Command losses were quickly outstripping the accession of replacement crews. After losing 26 out of 182 aircraft attacking Kiel on 13 June 1943, Eaker wrote Arnold: “our greatest need: replacement crews.”¹⁹¹ After the horrific losses of August, September, and October 1943, unescorted bomber penetration into Germany finally stopped.¹⁹²

In a classic organizational response, the problem was corrected by a major, directed change, precipitated by a high profile crisis. During the period of skyrocketing losses, Robert A. Lovett, assistant secretary of war for air, visited the American strategic bombing organizations in England. His appraisal of the situation concerned General Arnold, spurring him to order his director of military requirements, Gen Barney M. Giles, with the directive that “Within the next six months, you have got to get a fighter that can protect our bombers... Get to work on this right away, because by January ‘44, I want a fighter escort for all our bombers from the United Kingdom into Germany.”¹⁹³ Although the VIII Bomber Command continued to struggle for its own solution in the interim, Giles pieced together an impressive solution from existing programs in amazingly short order. By January 1944, the P-51B with drop-tanks was escorting bombers over Germany, and destroying the Luftwaffe in detail.¹⁹⁴ However, despite eventual success, missed opportunities abounded.

Missed Opportunities

While any number of counterfactuals might have helped VIII Bomber Command avoid or delay the crisis of October 1943, three particular missed opportunities were the product of organizational behavior, influenced by the invincible bomber legacy. The first and most obvious involved the failure of the USAAF to consistently advocate and drive the development of a long-

¹⁹¹ Ira C. Eaker, Letter to Arnold, 14 June 43, quoted in United States Air Force Historical Division, *The War Against the Luftwaffe: AAF Counter-air Operations April 1943 – June 1944* (Maxwell AFB, AL: Air University, 1944), 58-59. (Also known as USAF Historical Research Study No. 110)

¹⁹² Boylan, *AFHS 136*, 101.

¹⁹³ Henry H. Arnold, Memo to Giles, 28 June 43, quoted in Boylan, *AFHS 136*, 91-92.

¹⁹⁴ Boylan, *AFHS 136*, 154-160.

range fighter escort. Craven and Cate call this, “the most serious flaw in the AAF’s program (AWPD/1).”¹⁹⁵ Beyond that, many excellent chances to augment long-range escort capability existed, particularly by incorporating new technology onto existing platforms. Finally, the USAAF ignored a valid recipe for success when it ignored the proven doctrine of air superiority. Unfortunately the invincible bomber theory worked against each of these.

Clearly, the lingering effects of the invincible bomber legacy were instrumental in preventing the USAAF, and the VIII Bomber Command, from consistently advocating the need to develop a long-range escort. Even though top leaders like Arnold later claimed, “we always knew that we would have to have long-range fighter escort,” the institutional dominance of the invincible bomber idea shaped decisions long after its originators had moved on.¹⁹⁶ The Air Corps’ *idée fixe* of bomber invincibility had the insidious affect of casting doubt on the need and viability of potential solutions. This was poignantly portrayed when a specially convened Pursuit Board, considering the development of a long-range escort suggested by AWPD/1, questioned, “whether or not the project was worthwhile.”¹⁹⁷ As noted by Bernard Boylan, the board’s low prioritization of the escort plane was “surprising when it is recalled that the Air Corps had the Battle of Britain and other combat experience on which to draw for formulation of sound air doctrine.”¹⁹⁸ An organizational affinity for the status quo not only helps account for this *surprising* difficulty, but also continued to obscure the issue well into the American strategic bombing campaign.

From an OB perspective, incremental corrections were more palatable to the VIII Bomber Command, but these quick fixes had one significant effect. They created an environment where “it was still possible to believe that the bombers could get through.”¹⁹⁹ In general, USAAF leadership seemed reluctant to make major modifications to a plan that was built to reinforce the USAAF’s core beliefs in the decisive capability of airpower. In his book, *Fast Tanks and Heavy Bombers*, David E. Johnson provides an astute synopsis: “Clearly, the future institutional form of the air arm depended on its contribution to winning the impending war, but the Air Forces had also staked out an irreversible position: unescorted, high-altitude, daylight precision bombing would have a decisive impact on the outcome of the war.”²⁰⁰ In any

¹⁹⁵ Craven and Cate, *AAF in WWII*, 604.

¹⁹⁶ Henry H. Arnold, *Global Mission* (London: Hutchinson & Co. Ltd., 1951), 198.

¹⁹⁷ Pursuit Board Report, Sect. IV, 31 Oct 41, 18, AFHRA 168.12-9.

¹⁹⁸ Boylan, *AFHS* 136, 38.

¹⁹⁹ Byrd, *Walker*, 73.

²⁰⁰ Johnson, *Fast Tanks*, 171.

event, in September 1942, when the war production plan was scheduled for its first major review, nothing hinted at impending calamity. Early VIII Bomber Command missions into France convinced Eaker “that the German fighters are going to attack very gingerly,” and thus AWPD/42 was written to reinforce the original plan rather than re-orient.²⁰¹ So, another opportunity was missed and there was no major wartime effort to produce a long-range escort until heavy losses raised the question again in mid-1943.

However, if not for Eaker’s dogmatic belief that bombers would inevitably prove invincible, other golden opportunities to modify existing technology might have engendered long-term success. Range extension tanks for fighters are the best example. Used in the United States as far back as the 1920s, the Air Corps leadership dismissed them as a dangerous fire hazard.²⁰² Even as technology eventually alleviated this concern, VIII Fighter Command pilots hesitated to adopt their use until the obvious operational need for added escort range pushed this technology to the forefront. However, OB again played an important role in shaping their development and use.

In this case, organizational reluctance to deviate from a standard operating procedure hampered innovation. Eighth Air Force leaders rejected off-doctrine solutions because of comparatively minor problems with implementation, even though they might have resulted in a net benefit. The USAAF believed that drop-tanks made escort aircraft too vulnerable.²⁰³ Fighters could not fight effectively until tanks were jettisoned, and USAAF regulations went so far as to dictate that they be dropped “at the enemy coast.”²⁰⁴

In retrospect, it seems clear that the Eighth Air Force missed a grand opportunity to protect its bombers well into Germany with drop-tank equipped P-38s. Significant tank production problems caused some delay, but Eaker’s intermittent support for the fighter range extension concept also detracted.²⁰⁵ His lack of consistent support for the program was demonstrated by rapid changes in the priority Eaker placed on their acquisition. In June of 1943, he “ranked the need for auxiliary tanks fourth on his list of priorities,” but just a few weeks later, in July, he claimed that the lack of tanks “constitutes the only reason why our P-47s are not going with our bombers as far as the Ruhr at least.”²⁰⁶ The end result was that available fighters

²⁰¹ Ira C. Eaker, Letter to Spaatz, 19 Aug 42, quoted in Boylan, *AFHS 136*, 63.

²⁰² Boylan, *AFHS 136*, 44-45.

²⁰³ Boylan, *AFHS 136*, 243.

²⁰⁴ Boylan, *AFHS 136*, 119.

²⁰⁵ Boylan, *AFHS 136*, 112-121.

²⁰⁶ Boylan, *AFHS 136*, 121; Ira C. Eaker, Letter to Echols, 9 Jul 43, AFHRA 519.818.

such as the P-38 were not used to their maximum, extended range, until mid-November 1943, well after the unescorted bombing crisis that culminated with the second Schweinfurt mission.²⁰⁷

Nevertheless, United States fighter aircraft eventually prevailed against the Luftwaffe, suggesting one final missed opportunity. If the USAAF had not abandoned its traditional pursuit based air superiority concept, in favor of the invincible bomber theory, could it have benefited the strategic bombardment campaign? After World War I, air superiority became a basic tenet of the Air Corps, but its cultural acceptance remained tied to the fate of pursuit aviation. According to William Sherman, a noted Air Corps theorist of the 1920s, pursuit aviation's primary role was "the command of the air," making it "the very backbone of the air force."²⁰⁸ Although strategic bombing and pursuit aviation had potential for mutual benefit, the acceptance of propaganda surrounding the invincible bomber doctrine made air superiority seem irrelevant. According to Claire Chennault, this feeling was so prevalent in the mid-1930s, that the Office of the Chief of Staff of the Air Corps had a slogan: "Fighters are obsolete!"²⁰⁹ Clearly they believed that, if a bomber could inevitably get through, it demonstrated *de facto* air superiority.

However, by 1941, few if any Air Corps leaders believed that an individual bomber would always prevail. By his own admission, Eaker believed that "During daylight in good weather, when pursuit aviation is present in strength in an area, it can pretty nearly bar the air to the bomber."²¹⁰ Yet these men failed to reassess the value of cooperative support between fighters and bombers. It seems that the Air Corps leadership's deep seated organizational bias against pursuit aviation prevented them from accepting the suggestion of ACTS students who "wanted pursuit units to cooperate with bombardment immediately to develop tactics and acquire training together."²¹¹ Once again, a technological barrier, namely insufficient range and performance of escort aircraft, had encouraged American air theorists to abandon a valid concept. Because it looked technically infeasible to use fighter aircraft to assert air superiority deep over enemy territory, the concept was dropped, and not reconsidered until combat experience demanded it. By that time, many American airmen had lost their lives in unescorted bombers.

²⁰⁷ Boylan, *AFHS* 136, 107.

²⁰⁸ William C. Sherman, *Air Warfare* (New York: The Ronald Press Co., 1926), 119.

²⁰⁹ Chennault, *Way of a Fighter*, 26.

²¹⁰ Henry H Arnold and Ira C. Eaker, *Winged Warfare* (New York: Harper & Brothers, 1941), 176.

²¹¹ *The Characteristics and Employment of Fighter Aviation*, ACTS Text, 1938-1939, 13, AFHRA 248.242-46.

Without taking into account the influence of organizational behavior, Eaker's disavowal of the need for fighter based air superiority appears curious. His personal pursuit experience earlier in his career and his statement that bombers "would like the P-38s with us to help us get in so that the fighters won't work on us while we are bombing," demonstrate an appreciation for the air superiority concept.²¹² However, his infatuation with the inflated reports of fighter shoot-downs by VIII Bomber Command crews provides the most telling evidence of his understanding of the value of air superiority.²¹³ Eaker went so far as to tell Churchill at the Casablanca conference in January 1943, that daylight bombing was a way to attrite the Luftwaffe and purge the skies of German aircraft.²¹⁴ In retrospect, air superiority did turn out to be a significant milestone on the path to aerial victory, but organizational factors related to the invincible bomber legacy hampered Eaker's desire and ability to accept fighter-based air superiority.

A product of the greater USAAF organization, it seems clear that much of Eaker's historically inexplicable behavior can be at least partially explained through the lens of OB and the legacy of the invincible bomber doctrine. When added to the insight provided by the RA lens, this perspective provides a broader understanding of USAAF actions. However, one additional paradigm, based on a model that incorporates the competitive, political interaction between individuals within a government, offers further insights into the origins of this crisis.

²¹² Boylan, *AFHS* 136, 65.

²¹³ Parton, "Air Force Spoken Here", 178.

²¹⁴ Parton, "Air Force Spoken Here", 220.

CHAPTER 3

The Governmental Politics Perspective

I have always been amused by those who say they are quite willing to go into government but they are not willing to go into politics. My answer... is that you can no more divorce government from politics than you can separate sex from creation.

- James Forrestal

Although the Rational Actor (RA) and Organizational Behavior (OB) paradigms both provide keen insights, they fail to explain several nagging questions. Another model, the Governmental Politics (GP) paradigm, sheds light on these issues. The first two models suggested that a combination of rational choice and organizational behavior encouraged the protracted development and extreme longevity of the invincible bomber doctrine that eventually shaped the strategic bombing campaign against Germany. These viewpoints do well at explaining how the United States Army Air Forces' (USAAF) internalization of the invincible bomber doctrine resulted in such limited options that unescorted bombers seemed the only means available for conducting strategic aerial attack. In fact, to the air generals directly involved, like Haywood Hansell, "unescorted operations were not so much of a choice as an election to operate unescorted."²¹⁵ Yet, there is another aspect to the unescorted bomber conundrum.

Fortunately the GP model can help explain several of the vexing questions that remain. When rational behavior and organizational outputs fail to satisfy, examination of the political interactions between individuals often clarifies the situation. From this perspective, bargaining, in the context of a political competition, influences the decisions and actions of key individuals. People in government, particularly military officers, have unique, often parochial, goals determined by their rank, position, and experience. The combination of these factors determines a person's influence on the situation at hand. In this environment, where competition is unavoidable, bargaining often results. Players with a vested interest use their power to shape a situational outcome meeting both governmental and personal agendas with the least compromise. Consequently, this behavior produced results that appear inconsistent with the previous paradigms. However, an appreciation for political bargaining ties up loose ends, improving the conceptual understanding of a complex problem.

²¹⁵ Haywood S. Hansell, *Development of the US Concept of Bombardment Operations*, Lecture to Air War College, 16 Feb 51, 13, quoted in Boylan, AFHS 136, 15.

In this case, the GP model transcends almost every aspect of the evolution and implementation of the invincible bomber doctrine. First, during the interwar years, this interpretation helps explain how the outspoken advocates of the invincible bomber doctrine suppressed their opponents and minimized their influence. Also, this paradigm clarifies why AWPD/1 and the subsequent Pursuit Board of late 1941 underrated the importance of long-range escort development. Then, after the United States entered the war, this model sheds further light on the critical failing of the Eighth Air Force to make the most of existing technologies like the P-38 and range-extending drop-tanks. Indeed, in many cases where the actions or decisions of USAAF leaders do not seem to add up, the GP model provides critical perspective to gain a better understanding.

Governmental Politics in the 1920s

In the first decade after the Great War, Gen William “Billy” Mitchell epitomized the use of GP to advance the aspirations of American airmen. When examined from this viewpoint, his outspoken critique and agitation for reform provided fertile ground in which the invincible bomber doctrine could take hold. Mitchell’s belief that the “influence of air power on the ability of one nation to impress its will on another in an armed contest will be decisive” as well as his efficiency based arguments for an independent air service anchor the aspirations of the early Air Corps. In turn, these ideas originated and then reinforced the invincible bomber doctrine, enabling its manifestation in the USAAF strategic bombing campaigns of World War II.²¹⁶

A full accounting of the many personal interactions surrounding this political struggle is beyond the scope of this writing, but suffice it to note that Mitchell commonly operated in circles well above his rank, including supporters in Congress and enemies at the highest levels of the Army and Navy establishments. His position, that airmen should take responsibility for missions such as coastal defense and the protection of key territories, flaunted established United States doctrine and threatened the power and funding of the Navy and the Army.²¹⁷ In this high stakes political competition, Mitchell combined rhetoric with ostentatious aerial demonstrations in an attempt to parlay the grisly but fading memories of World War I ground warfare into a larger, autonomous, warfighting niche for airmen. Eventually, Mitchell’s efforts bore fruit. He

²¹⁶ William Mitchell, *Winged Defense* (New York: Dover Publications, Inc., 1925), 214, 221.

²¹⁷ Mitchell, *Winged Defense*, 215, 218-119.

successfully stimulated the congressional action that created the United States Army Air Corps in 1926, but paid the personal price of court-martial.²¹⁸

Perhaps most importantly, Mitchell's political maneuvering created a legacy that "airpower had great portent for the future of military affairs."²¹⁹ During the late 1920s and early 1930s, this key supposition drove the growth of the fledgling Air Corps. Debate within the Air Corps focused on promoting airpower, but GP competition tended to polarize airmen into two groups. After World War I, bomber advocates saw in Mitchell's theory an opportunity for personal and service aggrandizement that challenged orthodox, fighter centric doctrine. At the Air Corps Tactical School (ACTS), the home of Air Corps doctrinal development and the center of this controversy, debate revolved around faculty members whose background and academic responsibility determined their stance.

Battle for Control of the Air Corps

One of Mitchell's protégés, Robert Olds, became an instructor for the ACTS *Bombardment* course during the late 1920s. Like his mentor, he advocated a belief in the independent air mission and the dominance of bombardment.²²⁰ In turn, Mitchell's teachings, relayed by Olds, had a great influence on a student named Kenneth N. Walker. After attending ACTS in 1929, he also became an instructor there, where he "embraced all that Mitchell stood for." According to Walker's biographer, Martha Byrd, "It seemed obvious to him that the bomber would replace the fighter as the determining element in the Air Corps of the future."²²¹ With the approval of his revised bombardment text in March of 1930, Walker became the de facto leader of the ACTS pro-bomber faction. Eventually, his oft-repeated credo, "a well-planned, well-organized and well-flown air force attack will constitute an offensive that cannot be stopped," became the basis for the informal doctrine of the invincible bomber.²²²

Within the ACTS, the years from 1931 to 1933 saw the most contentious debate over the bomber versus pursuit controversy. Capt Claire Chennault, the ACTS Pursuit instructor, led the proponents of pursuit. "Seeing his branch of the Air Corps being written off as obsolete, he

²¹⁸ Martha Byrd, *Kenneth N. Walker: Airpower's Untempered Crusader* (Maxwell AFB, AL: Air University Press, 1997), 21. For more detail on Billy Mitchell's impact, read *The Army and its Air Corps* by James P. Tate.

²¹⁹ Byrd, *Walker*, 21.

²²⁰ Byrd, *Walker*, 25.

²²¹ Byrd, *Walker*, 36.

²²² Byrd, *Walker*, 36.

rebelled,” fighting vehemently against what he saw as “the bias of bomber generals.”²²³ Nevertheless, the influence of bomber advocates overwhelmed Chennault’s pursuit loyalists. Walker and other bomber zealots, endorsed by sympathetic Air Corps leaders, proselytized their pro-bomber agenda to students at the ACTS as they cycled through. The result was a lopsided competition. Although fighter advocates sensed a critical flaw in the collective thinking of the Air Corps, they were overmatched. Chennault believed that fighters were a critical enabler; but he conceded, “Bombardment is, of course, the sledge hammer of airpower.”²²⁴ The support of top leaders, particularly two consecutive chiefs of the Air Corps, Oscar Westover and Hap Arnold, had tipped the scales in favor of bombardment.²²⁵ The political association between Air Corps independence and strategic bombardment promised greater power and influence for the service and its leaders, thus attracting their support. In this environment, it was unnecessary for bombardment supporters to compromise.

This disparity in support within the Air Corps gave bomber advocates the power to frame the debate in their own terms. Even though there was potential for mutual support between bombardment and pursuit, both factions felt the need to make the contrast as stark as possible. In defense of his specialty, Chennault argued strongly that “Bombardment flying deep into enemy territory, required friendly fighter protection to prevent heavy losses if not utter failure of the mission.”²²⁶ Clearly, he did not see the bomber as invincible. Meanwhile, Walker and his cronies insisted that “no known agency [can] frustrate the accomplishment of a bombardment mission.”²²⁷ Pushed to extremes by competition and personal conviction, both argued their positions as if they were necessarily, mutually exclusive, obscuring the possibility that if they cooperated, they could both be right.

Driven by the parochial need to support their respective branches of aviation, these two adversarial groups, lead by Walker and Chennault, missed an opportunity for collaboration that would have made sense from a RA perspective. GP considerations stood in the way of that cooperation. As strong-willed, irascible peers, Walker and Chennault failed to contemplate a mutually beneficial compromise. As the eventual resolution of the air war over Germany

²²³ Presumably, Chennault was referring to a series of pro-bomber generals who led the Air Corps in the 1930s. Byrd, *Walker*, 29; Claire Lee Chennault, *Way of a Fighter: The Memoirs of Clair Lee Chennault* (New York: G. P. Putnam’s Sons, 1949), 20.

²²⁴ Chennault, *Way of A Fighter*, 20.

²²⁵ Thomas H. Greer, *The Development of Air Doctrine in the Army Air Arm: 1917-1941* (Maxwell AFB, AL: Air University, 1953), 80, 47. (Also known as USAF Historical Research Study No. 89)

²²⁶ Chennault, *Way of A Fighter*, 23.

²²⁷ Byrd, *Walker*, 37.

showed, fighters and bombers operating together provided tremendous synergistic benefits. The bombers needed fighter support to limit losses, while “American bombers in the air over Germany forced enemy planes to rise to meet the challenge,” permitting American fighters to engage them.²²⁸

In retrospect, it is easy to see how this cooperative tactic helped destroy the Luftwaffe. Yet, GP motivations encouraged the early 1930s bomber faction of the Air Corps to shape and frame the argument differently. It is doubtful that, even if Chennault had agreed to a compromise, bomber advocates would have gone along. Supporting fighters, even if used for escort, weakened the case for Air Corps autonomy. Rather than considering the potential symbiosis of bombers and fighters, Air Corps leaders shied away from fighters because they detracted from the primacy of the strategic air mission. The Army’s prioritization of air missions reflected its opposition to Air Corps independence. “The General Staff wanted it [the primary mission of the Air Corps] to be tactical support of ground forces,” and fighters were associated with that mission.²²⁹ In short, during the 1930s, Air Corps leaders linked the ideas of bomber primacy and air service independence. Thus, any support for fighters was an anathema to that goal, and summarily rejected by bomber advocates.

The GP competition surrounding this issue took several forms. The environment at the ACTS encouraged ideologues from each camp to engage in frequent verbal sparring. They also incorporated their positions, and supporting arguments, into the course materials. One particular class called *The Air Force*, purported to “integrate the functions of pursuit, bombardment, observation, and attack aviation into a single force,” but also served to advertise the current dominant doctrinal opinions within the school.²³⁰ By the mid 1930s, bomber advocates controlled the ACTS, and consequently this course reflected their views.²³¹ In the words of Clayton Bissell, the ACTS Pursuit course instructor, World War I ace, and fighter advocate, “bombardment had become the major weapon of aviation.”²³² However, there was little concrete evidence to back up these academic assertions.

Before wartime experience was available to bolster or rebut these claims, competitors on both sides of the argument used a series of flying exercises and experiments to validate their predictions regarding the vulnerability of bombers. Although, they changed few minds, both

²²⁸ Boylan, *AFHS* 136, 246.

²²⁹ Greer, *AFHS* 89, 95.

²³⁰ Byrd, *Walker*, 24.

²³¹ Byrd, *Walker*, 32-38.

²³² Greer, *AFHS* 89, 82.

factions thought the results confirmed their views, even though the final reports typically reflected the bias of the stronger pro-bomber group. In 1929, several ACTS instructors, including the assistant commandant, Maj Walter Frank, acted as air umpires for V Corps area maneuvers and concluded that, “there is considerable doubt among the umpires as to the ability of any air organization to stop a well organized, well flown air force attack.”²³³ Later, in 1933, Chennault and Walker both worked on a major exercise at Fort Knox to test the effectiveness of an early warning network in aiding the interception of bombers. Although that test seemed to confirm the potential of such a network, bomber proponents disputed the results. In the words of Claire Chennault, fighters had successfully intercepted bombers until the “freedom of action of the defending pursuit force” was limited.²³⁴ Finally, in 1934, a West coast exercise, sponsored by Hap Arnold, challenged outdated P-26s fighters to intercept the new B-12 bomber, with the result that the future chief of the Air Corps Oscar Westover called the fighters, “useless.”²³⁵ In each case, dubious results, masquerading as data, fed the swirling doctrinal debate at ACTS, bolstering the respective positions of the competitors.

After years of contentious argument, it was obvious to airmen like Walker that “considering ourselves as bombardiers or pursuers” built internal rivalries and prejudices within the Air Corps.²³⁶ As this division propagated, bomber units accepted the idea that escort was superfluous, while pursuit units looked for a more successful way to justify their existence. According to a survey of operational units taken in 1939, one bomber unit went so far as to offer the questionable argument that escorting fighters “too often served to alert hostile defenses and deny bombardment an element of surprise, which would sacrifice security.”²³⁷ Meanwhile, a fighter unit abdicated all responsibility for bomber support, stating “The need for pursuit protection is not apparent under conditions when bombardment can select the time and place of attack against a large number of widely scattered objectives.”²³⁸ These conclusions, products of contentious debates over roles and missions during the 1930s, compared American fighters and bombers, based on theories untested by war. This GP environment fostered a one-sided revision of doctrine, favoring the bomber and foretelling its dominance. For many in the Air Corps, it was a short mental leap to believe in bomber invincibility.

²³³ Byrd, *Walker*, 25.

²³⁴ Chennault, *Way of A Fighter*, 23; Boylan, *AFHS* 136, 65.

²³⁵ James Parton, “*Air Force Spoken Here*”: General Ira Eaker and the Command of the Air (Bethesda, MD: Alder & Alder, Publishers, Inc., 1986), 98.

²³⁶ Byrd, *Walker*, 35.

²³⁷ Report of Air Corps Board, Study #35, Questionnaire, 2nd Bomb Wing, AFHRA 415.717.

²³⁸ Report of Air Corps Board, Study #35, Questionnaire, 1st Pursuit Group, AFHRA 415.717.

By the mid 1930s, the bomber bloc, and its favored theory of bomber invincibility, overwhelmingly dominated the Air Corps.²³⁹ Despite, continued objections by a small minority, the emergence of superior bomber technology in the form of the B-17, and the promotion of bomber advocates to key positions in the Air Corps, ensured the continued competitive success of the bomber faction. This turn of events, possibly supplemented by the opportunity for personal aggrandizement as the leader of the Nationalist Chinese Air Force, helped push the opposition leader, Claire Chennault, to retire from the Army Air Corps in 1937. Meanwhile, Kenneth Walker vaulted to a key role in the American strategic bombing campaign just a few years later.²⁴⁰ Walker's appointment, along with several of his bomber associates from the ACTS, to work at the Air War Plans Division, allowed him to play a very influential role in translating the Air Corps bomber vision into a war plan against Germany.

Transition to War

Until United States involvement in World War II looked imminent, the Air Corps had no reason to reconsider its doctrinal favoritism of bombers. Although the Air Corps successfully leveraged the political strength of the decisive aerial attack idea to force the creation of the General Headquarters (GHQ) Air Force in 1935, it was not until 1941 that there was a "change in the dependent status of the air arm."²⁴¹ The transition from the Army Air Corps to the Army Air Forces, just months before Pearl Harbor, "was a significant advance toward autonomy."²⁴² However, as a consequence of this victory, airmen felt they had to deliver on their promises.

In the late 1930s, aerial combat experience in Europe raised questions about bomber vulnerability, yet high altitude, precision daylight bombing (HAPDB) doctrine, backed by the concept of bomber invincibility, still formed the core of American strategic airpower doctrine. In fact, even though Arnold, then chief of the Army Air Forces, publicly questioned bomber invincibility, many of his key subordinates still believed that American bombing doctrine was correct, and should not be changed before it had a full test.²⁴³ In the words of Ira Eaker, just before the start of the strategic bombing campaign, "Tooey [Spaatz] and my theory that day

²³⁹ Greer, *AFHS* 89, 66-67.

²⁴⁰ Chennault, *Way of A Fighter*, 31; Byrd, *Walker*, 65.

²⁴¹ Greer, *AFHS* 89, 26, 126.

²⁴² Greer, *AFHS* 89, 127.

²⁴³ Henry H. Arnold, Letter to Commanding General GHQ Air Force, 14 Nov 39, AFHRA 167.5-54.

bombardment is feasible is about to be tested where men's lives are put at stake.”²⁴⁴ Thus, some months prior, in September 1941, when President Franklin D. Roosevelt set a short suspense for estimating the war requirements needed for victory against the Axis powers, the AWPD surprised no one by developing a plan that reflected established strategic bombing doctrine and facilitated the Army Air Force's rise to power.

When tasked to present a plan for war, bomber advocates in charge of the AWPD undoubtedly envisioned an opportunity to unleash the decisive power and efficiency they saw in strategic bombing. Moreover, within the Army Air Forces, bomber primacy remained ideologically unchallenged. This meant that AWPD planners had no viable alternative theory to balance their bomber centric views. In the summer of 1941, the AWPD recruited four officers who knew each other well. Lt Col Harold George took charge of the air planning effort. Under him, Walker worked with two other former ACTS instructors, Haywood Hansell and Lawrence Kuter. According to Martha Byrd, George, Walker, and Hansell, seemed “united in friendship as well as profession,” and “each had a vision of the strategic air mission based on bombardment,” while Kuter “was philosophically one with the others.”²⁴⁵

This tight knit relationship, combined with a singular, bomber centric vision, ensured the unity of effort necessary to complete this enormous task in short order, but it also created a classic scenario for defective decision-making. In his seminal work, *Groupthink*, Irving Janis outlines a concept where small, cohesive, groups produce a psychological drive for consensus.²⁴⁶ Long before the recognition of this theory and its impact on GP, the writers of AWPD/1 displayed many of the telltale symptoms of groupthink. Every member of this small cohesive group believed in the ultimate invincibility of bombers. This excessive optimism masked the growing evidence of bomber vulnerability, and led them to propose a plan based on the flawed assumption that unescorted bombers could penetrate Germany without excessive losses. According to Kuter, they “had scoffed at the idea that fighters would be needed to protect bombers, to enable bombers to reach their objective.”²⁴⁷ For the close-knit group of bomber disciples at the AWPD, “there was no lack of confidence.”²⁴⁸

²⁴⁴ David E. Johnson, *Fast Tanks and Heavy Bombers: Innovations in the U.S. Army, 1917-1945* (Ithaca, NY: Cornell University Press, 1998), 173.

²⁴⁵ Byrd, *Walker*, 67.

²⁴⁶ Irving L. Janis, *Groupthink: Psychological Studies of Policy Decisions and Fiascoes*, Second Edition (Boston: Houghton Mifflin, 1982), 174-175.

²⁴⁷ Byrd, *Walker*, 73.

²⁴⁸ Byrd, *Walker*, 71.

The planning group at AWPD also demonstrated other hallmarks of the groupthink phenomena. Janis stresses that a collective effort to “rationalize in order to discount warnings or other information that might lead the members to reconsider their assumptions,” indicates his theory’s applicability.²⁴⁹ AWPD planners clearly exhibited this trait. In the face of evidence that British pursuit had decimated Luftwaffe bombers over England and that the vaunted B-17, in British hands, had repeatedly failed in missions over Nazi occupied Europe, the AWPD felt that because “American bombers were better armed; American formations were tighter,” it was still reasonable to “believe that the bombers would get through.”²⁵⁰

The emergence of Walker as the self-appointed *mindguard*, protecting the group from doubts about the effectiveness of their decisions, presented another telling symptom of groupthink at the AWPD.²⁵¹ Walker was “the believer, the aggressive advocate who brooked no doubts and drove policy as relentlessly as he drove himself.”²⁵² Although AWPD planners celebrated their belief that “a decade of doctrinal debate had been converted into a specific war plan and accepted by the War department,” the plan they produced discounted a significant threat to bombers and failed to provide any hedge against the predictable contingency of heavy fighter opposition.²⁵³

Nevertheless, the president accepted AWPD/1, and after the shock of Pearl Harbor, immediately implemented it. Thus, the 1930s concept of bomber invincibility carried over into World War II. The strength of the invincible bomber idea helped gain autonomy for the Air Corps, and positioned the USAAF for a decisive contribution to the defeat of Germany. However, it also caused the unfortunate side effect of stifling the development of an effective bomber escort. In the stiff competition for limited American aircraft production available during 1942, the desire to produce potentially decisive bombers outweighed what was seen as the questionable need for a supporting escort fighter. Beyond the production of existing bomber and fighter types, AWPD/1 documented the ambitious requirement for “3,740 bombers with a 10,000 mile range,” but “called for only 13 test model fighters to accompany them.”²⁵⁴ As a result, the Eighth Air Force had to make do with small numbers of range-limited fighters, based on existing

²⁴⁹ Janis, *Groupthink*, 174.

²⁵⁰ Wesley Frank Craven and James Lea Cate, *The Army Air Forces in World War II*. Vol. 1, *Plans and Early Operations, January 1939 to August 1942* (Chicago: The University of Chicago Press, 1948), 600-601; Byrd, *Walker*, 73.

²⁵¹ Janis, *Groupthink*, 40.

²⁵² Byrd, *Walker*, 67.

²⁵³ Byrd, *Walker*, 76.

²⁵⁴ Byrd, *Walker*, 75.

designs, until late in 1943, more than two years after AWPD/1 was written. When pressured to find an escort solution in 1943, the USAAF solved the problem in six months.²⁵⁵

The Governmental Politics Perspective within the Strategic Air Campaign

To simplify the analysis of how governmental politics affected the conduct of the American strategic air campaign in Europe during World War II, it helps to break the effort down into three different regimes. From the beginning of American participation in the war, a lively and contentious debate determined the type of missions the USAAF flew. AWPD/1 called for a massive strategic bombing campaign, but Arnold, Spaatz, and Eaker fought in a continuous battle with outside forces to ensure that HAPDB would win out as the primary method employed. Beyond that fracas, Eaker also had to compete with other commands for the equipment required to execute the plan and replace his losses. Finally, in the summer and fall of 1943, when rising bomber attrition began to threaten the timeline for the Allied invasion of Europe, the governmental politics model sheds light on how and when the crisis was resolved. What is more, the GP model not only provides insight, it also reveals the impact of the pervasive and durable legacy of the invincible bomber doctrine.

Deciding How to Employ Airpower

With AWPD/1 as a baseline for wartime industrial production, few observers of the American military doubted that aircraft would play a vital role in the American war effort. Nevertheless, there was still a lot of controversy over the proper way to employ airpower. Not everyone shared the zeal of USAAF bomber advocates for HAPDB. Army doctrine, spelled out in FM 1-5, called for the establishment of “functional forces which would then (in case of war) be attached to large territorial or tactical commands for the accomplishment of certain missions.”²⁵⁶ Although written in a way that did not rule out the possibility of independent action, it clearly emphasized the supporting role of the Air Forces. Nevertheless, when briefed on AWPD/1, the chief of staff of the Army, Gen George C. Marshall “thought it had merit,” even though the strategic air mission outlined in AWPD/1 “went counter to prevailing plans for the use of airpower,” and “placed the Army’s ground forces in a secondary role.”²⁵⁷ Possibly,

²⁵⁵ Boylan, *AFHS* 136, 159.

²⁵⁶ Greer, *AFHS* 89, 115.

²⁵⁷ Byrd, *Walker*, 75.

Marshall recognized airpower's potential for strategic action before the Army could deploy an adequate force, but he likely expected the Army Air Forces to provide full support to land operations when that time came. However, even with Marshall's tacit endorsement, the Allies still questioned the Air Corps' chosen method of employment, strategic attack.

Even before Eaker arrived in England to set up the VIII Bomber Command, the British tried to dissuade the Americans from attempting daylight bombing. In January 1942, Air Vice Marshal Arthur T. "Bomber" Harris told Eaker, "I bloody well don't think you can do it. We've tried it. We know. We've even tried it with your Fortresses."²⁵⁸ After failing to convince Arnold and Eaker of what they believed was the futility of their proposed course of action, the English eventually elevated the competition. Prime Minister Winston Churchill initially opposed daylight bombing by the Americans, and applied high-level diplomatic pressure to encourage the USAAF to modify their tactics.²⁵⁹ In a letter to Harry L. Hopkins, the American presidential advisor, Churchill asserted that American day bombers would "probably experience a heavy disaster" when flying beyond fighter escort, and "we must try to persuade them to divert these energies... to night work."²⁶⁰ The dispute simmered until the Casablanca summit conference of 1943, at which Eaker pleaded the case for HAPDB, and the British finally relented.²⁶¹ Yet, even while this dispute was underway, Eaker, then commander of the VIII Bomber Command, had to lobby for adequate resources.

The Battle for Resources

Each of the widely separated American theaters of World War II had an individual air component, with commanders of similar rank. This meant that theater specific air forces, such as Eighth Air Force for Europe, Twelfth Air Force for North Africa, and Fifth Air Force in the Far East, all had equal standing with the chief of staff, compelling them to justify their need for equipment. As the leader of the USAAF, Arnold applied his own priorities, but also had to defend his choices to the other service chiefs who inevitably favored the agendas of their constituent commanders. An intricate orchestration of bargaining and compromise followed.

As the USAAF's top administrator, Arnold played the pivotal role in determining how to allocate air assets, but outside influences still had an impact. Arnold's position provided access

²⁵⁸ Parton, "Air Force Spoken Here", 129-130.

²⁵⁹ Parton, "Air Force Spoken Here", 218.

²⁶⁰ Winston L. S. Churchill, Letter to Hopkins, 16 Oct 42, quoted in Parton, "Air Force Spoken Here", 190.

²⁶¹ Parton, "Air Force Spoken Here", 220-222.

to the national leadership, roughly equivalent to the other chiefs (Army Chief of Staff, General Marshall, and the Chief of Naval Operations, Adm Ernest J. King). However, the president held the chiefs collectively responsible for the overall conduct of the war. Under this arrangement, President Roosevelt's vision of Allied cooperation and ultimate victory often forced Arnold to act contrary to his personal preferences. From below, Arnold heard a never-ending chorus of demands from his subordinate commanders that required balancing. As Arnold once told Eaker, "he had eight youngsters to feed."²⁶² For example, even though aircraft production and allocation appeared predictable, the numbers of aircraft delivered to the Eighth Air Force varied according to short notice changes in war priorities.

Even with the pressure to balance competing priorities and meet short term needs, Arnold's career background, his enthusiastic support for AWPD/1, and his selection of his personal friend (Eaker) to command VIII Bomber Command, betrayed his predisposition toward strategic bombing.²⁶³ In fact, in discussions with the British, Arnold revealed a lingering belief in the invincible bomber when he advocated the potential of unescorted bombing raids. In April of 1942, Arnold told British Air Chief Marshal Sir Charles Portal, the senior leader of the RAF, that "it is possible that with the greater defensive firepower of our bombers, and the carefully developed technique of formation flying with mutually supporting fire, that our bombers may be able to penetrate in daylight beyond the radius of the fighters."²⁶⁴

Surely aware of Arnold's predisposition toward bombers, other American military leaders guarded against its excessive influence. As ground operations in Northern Africa approached, Dwight D. Eisenhower, the United States commander of the European Theater of Operations, successfully lobbied Marshall to ensure Arnold would shift resources into that theater, at the direct expense of the Eighth Air Force in England.²⁶⁵ On another occasion, Arnold mentioned that after a briefing aimed at increasing the aircraft allocation to England for the Combined Bomber Offensive, King was "asking questions as to where the airplanes will come from, and whether, if we meet the requirements in England, there will be sufficient available to also meet emergency situations in the Pacific."²⁶⁶ During 1942 and 1943, the dramatic increase in wartime demand for aircraft made it impossible for Arnold to meet all the demands, but he

²⁶² John W. Huston, ed., *American Airpower Comes of Age: General Henry H. Arnold's World War II Diaries*, Vol. 2. (Maxwell AFB, AL: Air University Press, 2002), 22.

²⁶³ Byrd, *Walker*, 75.

²⁶⁴ Henry H. Arnold, Letter to Portal, 8 Apr 42, quoted in Boylan, *AFHS* 136, 56.

²⁶⁵ Parton, "Air Force Spoken Here", 182-185.

²⁶⁶ Huston, *Arnold*, Vol. 2, 17.

also had the additional GP burden of defending the USAAF vision of victory through strategic bombardment. However, the parochial priorities of subordinates also demanded Arnold's attention.

According to AWPD/1, with its priority on the strategic offensive in Europe, the Eighth Air Force, with Gen Carl Spaatz commanding, had priority for the preponderance of aircraft. However, Eaker, commanding VIII Bomber Command, arrived in England first, and Spaatz did not follow for five months. Until Spaatz arrived, and then again after he succeeded him at Eighth Air Force on 1 December 1943, Eaker struggled to husband the bomber and fighter forces necessary to accomplish the strategic bombing of Germany. To his advantage, Eaker felt very familiar with his superiors, corresponding confidently with Arnold.²⁶⁷ Nevertheless, despite their common interest in the success of strategic attack, Arnold could not always supply Eaker with the number and type of aircraft he desired for the bombing campaign.

While attending the Symbol conference in January 1943, Arnold recognized the "serious shortage of aircraft in the hands of the units in contact with the enemy."²⁶⁸ Although he supplied aircraft to all his subordinate combat commands, Arnold was the only member of the combined chiefs of staff with a stake in strategic bombing. This set up a three-way struggle. Arnold, Marshall, and King, all held different ideas about the most important place to send aircraft; and each sought presidential and Allied support. Even though plans called for the build-up of a massive force in order to support large formations of bombers for deep penetrations into Germany, Arnold quipped, "During the Casablanca conference I was put on the defensive by both the British and the United States for not having our heavy bombers bombard Germany."²⁶⁹ Furthermore, he believed the other members of the combined chiefs of staff "have unfortunately looked upon it [Eighth Air Force] as a reservoir from which the demands of other theaters could be met."²⁷⁰ He summarized the situation this way: "Little by little our Air Plan has been torn to pieces and today we find that instead of being able to send 2,000 or 3,000 airplanes against Germany from bases in England, we end up with less than 1,000 bombers if present plans are consummated, and if this continued dispersion is not stopped."²⁷¹

²⁶⁷ Parton, "Air Force Spoken Here", 170.

²⁶⁸ Huston, *Arnold*, Vol. 2, 22.

²⁶⁹ Parton, "Air Force Spoken Here", 242.

²⁷⁰ Parton, "Air Force Spoken Here", 251.

²⁷¹ Henry H. Arnold, Letter to Hopkins, September 1942, quoted in Dudley Saward, *Bomber Harris* (Garden City, NY: Doubleday and Company, Inc., 1985), 171-173.

The effects of this competition rippled through VIII Bomber Command. Reduced aircraft shipments and the requirement to produce results as soon as possible shaped Eaker's operation. Although Eaker estimated the need for at least 300 bombers in each deep penetration formation, the VIII Bomber Command proved incapable of mounting such a force until July of 1943.²⁷² In the interim, Eaker tried to use his doctrinally insufficient forces to accomplish the strategic bombing mission against Germany. In his mind, success depended on using the forces on hand. Postponing the effort "would lead to further skepticism and disillusionment about the validity of the daylight program and could well provoke the British to reclaim all their airports and facilities they had turned over to the Eighth and to force its conversion to night bombing under the RAF."²⁷³ Given this complex situation, set in the high pressure atmosphere of World War II, it is not surprising that political bargaining played a key role in the selection of a remedial course of action.

To start, Eaker did not seem to believe that the shortage of aircraft would spoil his efforts. Selecting the simplest alternative, he temporarily scaled down the size of his formations, accepting higher attrition while attempting to compensate defensively with improved tactics. However, attrition rates climbed during 1943, slowing the growth of Eaker's force, inviting public criticism, and damaging Eaker's standing in comparison to his peers. By the spring of 1943, the Eighth Air Force had little to show for its high profile effort, while Gen James Doolittle, Eaker's contemporary and commander of the Twelfth Air Force, had gained notoriety both for his raid on Tokyo and his command's accumulated victories during the North African campaign. In the competitive, results-oriented environment of combat, Eaker needed to show success to keep pace politically. Consequently, he looked for ways to hedge his bets.

While the previous chapter on organizational behavior helped to explain Eaker's propensity for readily available fixes, he also pursued more robust solutions that required extensive negotiation. His erratic efforts to provide bomber escort into Germany provide the best example of this. Eaker's varied background certainly influenced his changing opinion on escort. Originally a pursuit pilot, Eaker asserted in his book, *Winged Warfare*, that "during daylight in good weather, when pursuit aviation is present in strength in the area, it can pretty nearly bar the air to the bomber."²⁷⁴ Then, in August of 1941, Eaker visited England as an observer with the purpose of determining "the best thought now prevalent on fighter escort

²⁷² Parton, "Air Force Spoken Here", 290-291.

²⁷³ Parton, "Air Force Spoken Here", 233.

²⁷⁴ Henry H. Arnold and Ira C. Eaker, *Winged Warfare* (New York: Harper & Brothers, 1941), 176.

protection.”²⁷⁵ He concluded that several technical difficulties with long-range escort existed, and “he perceived no existing solution.”²⁷⁶ Nevertheless, he claimed that once appointed commander of VIII Bomber Command, he very early “became convinced that it would be greatly to our advantage and reduce our losses significantly if we could have fighters to protect us.”²⁷⁷ P-38 Lightning deliveries to England in the summer of 1942 appeared the best option to accomplish that feat.

Although some P-38s arrived via trans-oceanic flights with drop-tanks, Eaker elected not to use these craft for long-range escort. The concept for Eighth Air Force operations remained focused on large bomber formations protecting themselves, while the initial euphoria over the success of relatively small B-17 raids into France, during August 1942, stifled Eaker’s motivation to explore the escort alternative.²⁷⁸ Thus, when Arnold redirected a large number of aircraft from England to North Africa, Eaker seemed more devastated by the loss of the bombers than the pursuit planes. Even though he hoped that P-38s could “go with us another 100 miles or so into enemy territory,” Eaker quickly resigned himself to losing these aircraft, recognizing that “all P-38 assigned to the European theater would go for some time to the Mediterranean.”²⁷⁹ Eaker might have reasoned that General Kenney in the South Pacific, or General Doolittle in Africa, valued the long-range P-38s more than he did. Doolittle had enthusiastically embraced escort for his bombers on ground support and interdiction missions, while Kenney’s forces had to traverse long distances between isolated island bases. Even so, Eaker saw an opportunity to strike a bargain.

Since Eaker believed that Arnold would divert the P-38s even if he objected, it made sense for him to push instead for a different aircraft type, the new P-47 Thunderbolt. Arnold granted Eaker’s request to “equip the VIII Fighter Command units with P-47s,” despite “some doubts about the soundness of using it for close air support because of the low speeds it would have to maintain and because it lacked a fast acceleration rate.”²⁸⁰ Unfortunately, the success of this gambit was predicated on an overly optimistic projection that these aircraft would be

²⁷⁵ Parton, “*Air Force Spoken Here*”, 121.

²⁷⁶ Parton, “*Air Force Spoken Here*”, 123.

²⁷⁷ Parton, “*Air Force Spoken Here*”, 173.

²⁷⁸ Boylan, *AFHS 136*, 68.

²⁷⁹ Boylan, *AFHS 136*, 65, 78.

²⁸⁰ Boylan, *AFHS 136*, 78-79.

available in quantity, with range extension tanks, by 1 March 1943.²⁸¹ When it became apparent that the P-47 would arrive late, Eaker came to regret this arrangement.

As losses mounted, and the pressure to mitigate bomber attrition increased, Eaker looked again at the escort alternative. In early 1943, he came to a better appreciation of the P-38's capabilities. In a letter to Arnold, Eaker asserted that "the P-38 is a much better plane than has been generally assumed."²⁸² However, later that month, he was disappointed when Arnold again diverted the P-38s to Twelfth Air Force.²⁸³ Not available in quantity until April 1943, and then without tanks, these limitations crippled any potential for the P-47 to bolster the American strategic bombing campaign by culling Luftwaffe fighters encountered while escorting Eighth Air Force bombers.²⁸⁴

The integration of escort fighters into the strategic bombing campaign also strained relations between bomber and fighter leadership within the Eighth Air Force. For Gen Frank O'D. Hunter, of the VIII Fighter Command, Eaker's uncertainty over the necessity of long-range escort, created a difficult situation. A sign on Hunter's office wall proclaimed, "The primary job of the VIII Fighter Command is to bring the bombers back alive," but the best way to do that was unclear.²⁸⁵ Eaker's change of heart regarding the P-38 proved problematic. When he realized he needed escort, Eaker coveted the Lightning for its substantial internal fuel capacity. However, since both the P-47 and the P-38 would require external tanks to escort bombers deep into Germany, Hunter argued against requesting the older P-38 "until he had given the P-47 a complete trial in combat."²⁸⁶ Apparently Arnold interpreted this conservative approach as an indication that Hunter was "lacking in aggressiveness."²⁸⁷ On Arnold's behest, Eaker dismissed Hunter on 1 July 1943.²⁸⁸

This firing reflected the GP turmoil ongoing within the Eighth Air Force. At a crucial time, when the VIII Fighter Command was needed to help repulse the resurgent Luftwaffe, Arnold forced Eaker to change commanders. Even if Arnold's critique of Hunter was completely justified, Eaker's disjointed reactions had resulted in a lack of clear direction, handicapping Hunter's efforts. To his credit, Eaker also tried several other remedies besides

²⁸¹ Boylan, *AFHS* 136, 78.

²⁸² Boylan, *AFHS* 136, 280.

²⁸³ Boylan, *AFHS* 136, 82.

²⁸⁴ Boylan, *AFHS* 136, 79.

²⁸⁵ Geoffrey Perret, *Winged Victory: The Army Air Forces in World War II* (New York: Random House, 1993), 270.

²⁸⁶ Boylan, *AFHS* 136, 120-121.

²⁸⁷ Huston, *Arnold*, Vol. 2, 23.

²⁸⁸ Huston, *Arnold*, Vol. 2, 23.

escort to combat rising attrition. However, his tentative attempts to improve the use of existing fighters failed to forestall a crisis. As a result, the situation deteriorated. Lacking options, he felt compelled to continue with the use of existing doctrine, hoping despite the rapidly accumulating evidence that bombers would eventually prove invincible.

Early in the summer of 1943, opposition continued to increase and losses started to mount. Besides their concern over the cost in lives and airframes, American leaders became increasingly worried that the resurgent Luftwaffe was a threat to future Allied plans. After the Trident conference in May of 1943, “it was now clear that the primary *raison d'être* for daylight strategic bombing was to allow the ground invasion of the continent.”²⁸⁹ With a near term crisis and few short-term prospects for remedy, Eaker chose to redouble his efforts and bet on the postulated, ultimate success of larger bomber formations. Eaker reasoned, on questionable grounds that “it is axiomatic that our loss rate goes down as the force builds up.”²⁹⁰ In his view, the substantial rewards of a successful strategic bombing campaign (i.e., victory over Germany) warranted the losses incurred, even though higher than expected.²⁹¹ Evidently, Arnold came to view the situation differently.

The Assistant Secretary of War, Robert A. Lovett, went to Europe to review the American air effort in June 1943. He presented his findings to Arnold upon his return, suggesting how serious the situation had become. Contrary to Eaker’s parochial viewpoint that “the battle had reached a critical stage and should be pressed to its maximum,” Lovett plainly stated, “it is increasingly apparent that fighter escort will have to be provided for B-17s on as many missions as possible.”²⁹² This immediately prompted Arnold to direct an effort to, “Within this next six months... get a fighter to protect our bombers.”²⁹³ Meanwhile, in an attempt to fulfill the targeting requirements of the Combined Bomber Offensive, Eaker continued to direct costly unescorted bomber forays into Germany.

By the end of the summer, the high cost and questionable payoff of VIII Bomber Command operations began putting considerable GP pressure on Arnold. In September, he went to England to see operations first hand. He returned convinced of the “immediate need for more effective long-range fighters.” In addition, he pushed for the accelerated delivery of more bombers, telling Marshall that “the complete destruction” of the Luftwaffe was approaching a

²⁸⁹ Huston, *Arnold*, Vol. 2, 21.

²⁹⁰ Parton, “*Air Force Spoken Here*”, 322.

²⁹¹ Huston, *Arnold*, Vol. 2, 47.

²⁹² Boylan, *AFHS 136*, 90, 91.

²⁹³ Henry H. Arnold, Memo to Giles, 28 June 43, AFHRA 202.2-11.

“crucial stage.”²⁹⁴ Nevertheless, Arnold continued to push Eaker for a “maximum effort for every mission,” betraying his anxiety that success was in doubt.²⁹⁵ To ensure he did everything possible to help the Eighth Air Force succeed, Arnold diverted many late 1943 fighter allocations from other theaters to England.²⁹⁶ Failure of the American strategic bombing offensive risked Arnold’s credibility with the other chiefs, the President, and the Allies, as well as the fortunes of the USAAF.

Ultimately, as leader of the USAAF, Arnold’s “concept of strategic bombing as the *raison d'être* of a current and postwar air force,” and his “belief in the invulnerability of the B-17 to enemy fighters”²⁹⁷ nurtured the unsavory situation facing the VIII Bomber Command in the fall of 1943. Eventually, after a second round of heinous losses while targeting the ball bearing production facilities at Schweinfurt and little evidence that the Luftwaffe was in decline, unescorted missions into Germany quietly stopped. Just weeks later, Eaker received a transfer.²⁹⁸ Although couched as a lateral move to a different theater, Eaker had not completed his mission and was very unhappy about the move.²⁹⁹ As a close friend and loyal subordinate of the chief with very similar views, Eaker’s leadership vision had reflected Arnold’s opinions. However, when it became apparent that unescorted bombing was untenable, Arnold withdrew his support for Eaker. From a GP perspective, the fact that Doolittle, a national hero who had unwaveringly advocated escort and would quickly benefit from the introduction of the long-range P-51 fighter, replaced Eaker at the helm of Eighth Air Force, casts Eaker as the primary political victim of his own adherence to the invincible bomber legacy.³⁰⁰

²⁹⁴ Huston, *Arnold*, Vol. 2, 45.

²⁹⁵ Huston, *Arnold*, Vol. 2, 46.

²⁹⁶ Huston, *Arnold*, Vol. 2, 47-48.

²⁹⁷ Huston, *Arnold*, Vol. 2, 52.

²⁹⁸ Johnson, *Fast Tanks*, 211.

²⁹⁹ Parton, “*Air Force Spoken Here*”, 336-338.

³⁰⁰ Johnson, *Fast Tanks*, 207; Boylan, *AFHS* 136, 77.

Conclusion

The preceding historical analysis, described from three different analytical perspectives, attempts to improve the overall understanding of the reasons for the American strategic bombing crisis of 1943. Hopefully, this analysis offered an appreciation for the subtle factors influencing this event and revealed insights that might apply to current or future situations. In a search for enduring lessons, the difficulties experienced by the VIII Bomber Command during World War II provide a plethora of valuable examples for the air strategist, each with potential linkages to current operations. The unhindered period of doctrinal and technological development that preceded World War II, followed by a rapid buildup of forces and the subsequent testing of accepted doctrine, provides an excellent baseline for retrospective analysis and subsequent translation to fit current situations. However, the failure to avoid a major crisis, especially considering the multiple warnings and missed opportunities to avert the crisis, makes this aerial vignette particularly poignant.

In short, this period of history has all the makings of a classic military failure, with an airpower twist. Revolutionary technology, coupled with new doctrine, captures the imagination and aspirations of American airmen, gaining momentum until a new paradigm eventually dominates the air service. Even as this doctrine started to show its frailty, the Air Corps pressed it into service and protected it for various rational, organizational and political reasons. Unfortunately, the resulting crisis could have been catastrophic for the Allied war effort had it manifested itself before technology was able to provide a viable alternative. It is difficult to speculate on the course of the air war over Europe had the American strategic bombing crisis developed a year earlier, but American air strategy might have changed radically. As it happened, the weather conspired to minimize the impact of General Arnold's October 1943 moratorium on unescorted bomber missions over Germany. Instead, the Eighth Air Force rode out the end of 1943 until the P-51B was commonly available early in 1944. When that aircraft appeared on the scene, long-range escort suddenly became achievable.

This crisis resulted from more than a simple time delay until technology could provide the required protection. For years prior to World War II, doctrinal debate raged over the necessity of bomber escort. While convenient to attribute the cause of this crisis to immature technology, that only provides a partial explanation. Accepting it as the sole cause mistakenly downplays the importance of the causal factors highlighted by alternative perspectives.

While the Rational Actor Model resonates with the classic historical explanation of the air debacle epitomized by the bloody raids on Schweinfurt, it fails to adequately explain why the Air Corps avoided technologically feasible interim remedies. Efforts to improve the range of existing fighters with range-extension drop tanks or expanded internal fuel capacity, could have mitigated the impact of increasingly lethal Luftwaffe attacks on bombers. Unfortunately the Army Air Forces and later the Eighth Air Force, never adequately or persistently pursued these alternatives. For a variety of reasons, the VIII Bomber Command clung to the belief that minor adjustments to established doctrine, such as improved defensive tactics and larger formations would ultimately outweigh German attacks.

The Rational Actor model postulates that Air Corps leaders, given better foresight, could have developed a suitable long-range escort fighter much earlier, but instead they favored inadequate short-term remedies. Alone, this explanation fails to recognize the effect of strong institutional behavior stemming from the Air Corps struggle for independence, and the dynamic competitions between ambitious individuals whose career aspirations depended on established bomber centric doctrinal ideas. In the end, the Rational Actor model provides the traditional, accepted rationale for why this crisis occurred, yet it leaves many open questions.

The analysis through the lens of the Organizational Behavior Model fills in more of the puzzle. Recognition of the significant behavioral constraints imposed by the Air Corps' desire for autonomy, and standard output patterns, leads to the conclusion that some backsliding and ineffectual efforts at change were inevitable. In this case, the Organizational Behavior model suggests a reason why the Air Corps proved so difficult to change, despite valid doctrinal critiques by many of its prominent leaders. The Organizational Behavior model accurately predicts the Air Corps' natural inclination to support a strategy that reinforced its autonomy. Furthermore, theory suggests that only a decisive force from outside could sufficiently overpower organizational inertia to induce a substantial correction.

History confirms that this exact scenario developed. After years of doctrinal evolution, and months of problematic execution, it took a sweeping order by Arnold to provide the impetus for solution. Although possibly attributable to a lucky coincidence of desperation and technological maturation, Giles produced a viable remedy to the long-range escort problem within six months of Arnold's order. However, during the intervening period the American strategic bombing effort faced its crisis of attrition, temporarily curtailing the American strategic bombing effort. Contrary to the Rational Actor Model, the Organizational Behavior Model

debunks the common impression that this crisis stemmed simply from a problem recognized too late. In addition, it insinuates that, even if recognized, this type of crisis generating problem defies easy remedy from within the organization. It is likely that only Arnold's powerful direction from the top could have changed the situation. As it happened, this occurred, but too late to avoid the crisis.

The Governmental Politics Model describes the interpersonal relationships influencing Arnold's willingness to demand drastic change. All through this era, various individuals became associated with the core doctrinal issues of the Air Corps and the Army Air Forces, particularly the invincible bomber theory. Consequently, many of those men tended to view the success of that theory and attempted revisions as a threat to their personal standing and power. Although they seemed to genuinely believe they were acting in the best interest of the Service, they subconsciously favored the doctrinal status quo. Since these men held key positions of power, many valuable corrective initiatives were insidiously defeated. In effect, the political attachment to bomber invincibility, demonstrated by Eaker and others, reinforced the organizational inertia predicted by the Organizational Behavior Model. As a result, VIII Bomber Command proved virtually incapable of adopting the drastic changes required to stave off this type of crisis. From the Governmental Politics perspective, it is not surprising that Eaker had to be relieved in order to put the United States strategic bombing effort back on track.

These three analytical models provide valuable strategic focus for historical examination. Just as people naturally seek simple straightforward explanations, analysis could easily become overwhelmingly complex if every possible perspective was considered. However, for the military strategist, a comprehensive understanding of a particular situation can uncover important contributing factors that might go unrecognized without an active pursuit of alternative perspectives. Allison's three perspectives provide a well-balanced, intellectually manageable, tool to prevent analytical myopia. Air strategists should beware of the *accepted rationale* unless it is supported from multiple perspectives.

In this case, many interesting historical elements of the crisis fit each of Allison's models, but many more were possible. While this investigation used prime examples to improve the broad understanding of the topic, clarifying why airpower struggled in this instance, further research could reinforce the fidelity of the argument. Every element of Allison's models provides an opportunity for thorough analysis, with a high probability of discovering new and

interesting relationships. While beyond the scope of this project, this daunting task merits further work and promises further revealing insights.

Yet, even at the intermediate level of detail in this study, Allison's alternative viewpoints endorse several broad conclusions. Clearly, the issues and events brought to light in each model intertwined. Each decision along the way, and the ultimate failure to avert the crisis, resulted from a conglomeration of multiple influences. Recognizing the value of alternative perspectives implies that no simple, singular reason for the American strategic bombing crisis could suffice. Trying to pick just one reason, underplays the infinite subtlety of the causal relationships. Perhaps the most important lesson that can be derived from this thesis is that simple answers, drawn from single viewpoints, are unlikely to hold up under close scrutiny.

Nevertheless, it is tempting to judge which influences proved most important to the ultimate outcome of these events. Although historians traditionally favor the explanations advanced by the Rational Actor Model, multi-perspective analysis offers a different insight. A common linkage between the models gives a basis for comparison. For this case, the most obvious interconnection is doctrine. Key to all three paradigms, the invincible bomber doctrine had major rational, organizational, and political ramifications, but each model weighed these influences differently.

The Rational Actor Model recognized doctrine as a baseline for wartime employment of forces, but failed to appreciate its strong organizational and political effects. Through the interwar years and up until the crisis, organizations and individuals grew to identify themselves with this doctrine. Thus, abandoning the idea of the invincible bomber seemed to damage the prestige of the organization and the power of associated individuals. In broad terms, the Organizational Behavior and Governmental Politics models make it easy to understand why the unescorted bomber concept remained so resilient, despite its repeated failings.

Between these two models, Organizational Behavior highlights the most dramatic overall influences. The Governmental Politics' focus on competition between individuals suggests a polarized debate between adversarial positions for and against unescorted bombers. While not insignificant, this viewpoint hints at the possibility for a moderate compromise between adversaries. In contrast, the Organizational Behavior viewpoint recognizes the tight linkage between the Air Corps/Army Air Forces and accepted doctrine, correctly predicting the overwhelming reluctance to accept major changes. All in all, the Organizational Behavior

paradigm provides only one piece of the puzzle, relying on the other models to fill in the discontinuities, but its perspective is central to understanding how and why this crisis developed.

Hopefully, these insights will add to the air strategist's tool kit, helping to avoid future crises. Technology and doctrine will undoubtedly continue to advance, but future conflicts will bear certain similarities. Decision makers will likely continue to focus on making rational choices to advance their cause, but the complex interactions of organizations and individuals should not be dismissed as inconsequential. Given a future scenario, strategists and commanders could benefit from an analysis of prominent contextual factors, through the lens alternative perspectives. In this way, common linkages between paradigms might become obvious, providing strategic warning of potential pitfalls.

Bibliography

Books

Allison, Graham and Phillip Zelikow. *Essence of Decision: Explaining the Cuban Missile Crisis*, Second Edition. New York: Longman, 1999.

Army War College. *The Signal Corps and Air Service*, Washington D.C.: Government Printing Office, 1922.

Arnold, Henry H. *Global Mission*. London: Hutchinson & Co. Ltd., 1951.

Arnold, Henry H., and Ira C. Eaker. *This Flying Game*. New York: Funk & Wagnalls, 1936.

Arnold, Henry H., and Ira C. Eaker. *Winged Warfare*. New York: Harper & Brothers, 1941.

Benton, Jeffrey C. *They Served Here: Thirty-Three Maxwell Men*. Maxwell AFB, AL: Air University Press, 1999.

Builder, Carl H. *The Masks of War: American Military Styles in Strategy and Analysis*. Baltimore: The Johns Hopkins University Press, 1989.

Byrd, Martha. *Kenneth N. Walker: Airpower's Untempered Crusader*. Maxwell AFB, AL: Air University Press, 1997.

Chennault, Claire Lee. *Way of a Fighter: The Memoirs of Clair Lee Chennault*. New York: G. P. Putnam's Sons, 1949.

Coffey, Thomas M. *Decision Over Schweinfurt*. New York: David McKay Company, 1977.

Cohen, Eliot A. and John Gooch. *Military Misfortunes: The Anatomy of Failure in War*. New York: The Free Press, 1990.

Corum, James S. *The Luftwaffe: Creating the Operational Air War, 1918-1940*. Lawrence KS: University of Kansas Press, 1997.

Craven, Wesley Frank and James Lea Cate. *The Army Air Forces in World War II*. Vol. 1, *Plans and Early Operations, January 1939 to August 1942*. Chicago: The University of Chicago Press, 1948.

Douhet, Giulio. *The Command of the Air*. Translated by Dino Ferrari. New York: Coward-McCann, 1942.

Futrell, Robert Frank. *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1907-1960*. Maxwell AFB, AL: Air University Press, 1989.

Griffith, Charles. *The Quest: Haywood Hansell and American Strategic Bombing in World War II*. Maxwell AFB, AL: Air University Press, 1999.

Griffith, Thomas E. *MacArthur's Airmen: General George C. Kenney and the War in the Southwest Pacific*. Lawrence KS: University of Kansas Press, 1998.

Hansell, Haywood S. *The Air Plan that Defeated Hitler*. Atlanta, GA: Higgins-McArthur/Longino & Porter, Inc., 1972.

Holley, I. B. *Ideas and Weapons*. New York: Yale University Press, 1953.

_____. *Technology and Military Doctrine: Essays on a Challenging Relationship*. Maxwell AFB, AL: Air University Press, 2004.

Huston, John W., ed. *American Airpower Comes of Age: General Henry H. Arnold's World War II Diaries*. Vol. 1. Maxwell AFB, AL: Air University Press, 2002.

_____. *American Airpower Comes of Age: General Henry H. Arnold's World War II Diaries*. Vol. 2. Maxwell AFB, AL: Air University Press, 2002.

Jacobs, Paul, and Robert Lightsey. *Battle of Britain Illustrated*. New York: McGraw-Hill, 2003.

Janis, Irving L. *Groupthink: Psychological Studies of Policy Decisions and Fiascoes*, Second Edition. Boston: Houghton Mifflin, 1982.

Johnson, David E. *Fast Tanks & Heavy Bombers: Innovations in the U.S. Army, 1917-1945*. Ithaca, NY: Cornell University Press, 1998.

Keegan, John. *The Face of Battle*. New York: Viking Press, 1976.

Kingdon, John W. *Agendas, Alternatives, and Public Policies*, Second Edition. New York: Longman, 1995.

McFarland, Stephen L. *America's Pursuit of Precision Bombing: 1910-1945*. Washington D.C.: Smithsonian Institution Press, 1995.

McFarland, Stephen Lee and Wesley Phillips Newton. *To Command the Sky: The Battle for Air Superiority Over Germany, 1942-1944*. Washington D. C.: Smithsonian Institution Press, 1991.

Meilinger, Phillip S., ed. *The Paths of Heaven: The Evolution of Airpower Theory*. Maxwell AFB, AL: Air University Press, 1997.

_____. *Significant Events in Air Force History*. Washington D. C.: GPO, 2003.

Mets, David R. *Master of Airpower*. Novato, CA: Presidio Press, 1988.

Mitchell, William. *Winged Defense*. New York: Dover Publications, Inc., 1925.

_____. *Skyways: A Book on Modern Aeronautics*. Philadelphia: J. B. Lippincott, 1930.

Moy, Timothy. *War Machines: Transforming Technologies in the U.S. Military, 1920-1940*. College Station, TX: Texas A&M University Press, 2001.

Parton, James. "Air Force Spoken Here": *General Ira Eaker and the Command of the Air*. Bethesda, MD: Alder & Alder, Publishers, Inc., 1986.

Perret, Geoffrey. *Winged Victory: The Army Air Forces in World War II*. New York: Random House, 1993.

Robertson, Linda R. *The Dream of Civilized Warfare*. Minneapolis, MN: University of Minnesota Press, 2003.

Sherry, Michael S. *The Rise of American Air Power: The Creation of Armageddon*. New Haven, CT: Yale University Press, 1987.

Sigaud, Louis A. *Douhet and Aerial Warfare*. New York: G. P. Putnam's Sons, 1941.

Tate, James P. *The Army and Its Air Corps: Army Policy toward Aviation, 1919-1941*. Maxwell AFB, AL: Air University Press, 1998.

Saward, Dudley. *Bomber Harris*. Garden City, NY: Doubleday and Company, Inc., 1985.

Sherman, William C. *Air Warfare*. New York: The Ronald Press Co., 1926.

Westermann, Edward B. *Flak: German Anti-Aircraft Defenses, 1941-1945*. Lawrence, KS: University of Kansas Press, 2001.

Williams, George K. *Biplanes and Bombsights: British Bombing in World War I*, Maxwell AFB, AL: Air University Press, 1999.

Historical Studies

Boylan, Bernard L. *The Development of the Long-range Escort Fighter*. Ph.D. diss., University of Missouri, 1955. (Also known as *USAF Historical Research Study No. 136*)

Finney, Robert T. *History of the Air Corps Tactical School, 1920-1940*. Washington D. C.: Center for Air Force History, 1992. (Also known as *USAF Historical Study No. 100*)

Hall, R. Cargill, ed. *Case Studies in Strategic Bombardment*. Washington D. C.: GPO, 1998.

Greer, Thomas H. *The Development of Air Doctrine in the Army Air Arm: 1917-1941*. Maxwell AFB, AL: Air University, 1953. (Also known as *USAF Historical Research Study No. 89*)

United States Air Force Historical Division. *The Development of the Heavy Bomber: 1918-1944*. Maxwell AFB, AL: Air University, 1951. (Also known as *USAF Historical Research Study No. 6*)

_____. *The Early Operations of the Eighth Air Force and the Origins of the Combined Bomber Offensive: 17 August 1942 – 10 June 1943*. Maxwell AFB, AL: Air University, 1946. (Also known as *USAF Historical Research Study No. 118*)

_____. *The War Against the Luftwaffe: AAF Counter-air Operations April 1943 – June 1944*. Maxwell AFB, AL: Air University, 1944. (Also known as *USAF Historical Research Study No. 110*)

Unpublished Documents

Arnold, Henry H. Letter to Commanding General of GHQ Air Force, 14 Nov 39. AFHRA 167.5-54 (folder dated 27 Aug 40).

_____. Memo for Giles, 28 June 1943, Part 1. AFHRA 202.2-11.

_____. Letter to Eaker, 1 Aug 43. AFHRA 168.491.

Bombardment, ACTS text, November 1935. AFHRA 248.101-9.

The Characteristics and Employment of Fighter Aviation, ACTS Text, 1938-1939, 13. AFHRA 248.242-46.

Conference for Study on Improvement in Armament and Defensive Firepower of Bombardment Aircraft, 20 Dec 1939. AFHRA 167.5-53.

Crocker, Harrison G. *The Use of Aviation in the Spanish Civil War*, ACTS text, 1937-1938. AFHRA 248.501-79B.

Eaker, Ira C. Letter to Echols, 9 Jul 43. AFHRA 519.818.

_____. *Report on Trip to England*, Section III. AFHRA 168.1-13A.

Eighth Air Force Policy File, 21 Feb 42, Vol II. AFHRA 520.154.

Firepower of Bombardment Formations, Report of the Air Corps Board, Study #53, 3 Jan 1940. AFHRA 167.5-53.

Giles, Barney M. Letter to Eaker, 30 July 43. AFHRA 168.491

Multi-Engine Fighter Aircraft, Report of the Air Corps Board, Study #2, 15 July 1935. AFHRA 167.5-2.

Pursuit Board Report, Section IV, 31 October 1941. AFHRA 168.12-9

Pursuit Board Report, Section X, 31 October 1941. AFHRA 168.12-9.

Report of Air Corps Board, Study #35, Questionnaire, 2nd Bomb Wing. AFHRA 415.717.

Report of Air Corps Board, Study #35, Questionnaire, 1st Pursuit Group. AFHRA 415.717.

Requirements for Air Ascendancy, AWPD/42, Tab. D, 9 September 1942. AFHRA 145.82-42.

Spaatz, Carl A. *Selection of Targets for Operations Against Germany*, Letter to Eighth Air Force G2, 5 May 1942. AFHRA 520.186.

Tactical Doctrine in Employment of Bombardment Aviation, Plan for Bomber Command and Constituent Units to Arrive in U.K. in 1942, Annex, Part V, 1942. AFHRA 142.044E.

Tactics and Techniques of Long-Range Fighter Escort, History of the Eighth Air Force, April 1943 – February 1944. AFHRA 520.549A